

BOTANICAL SURVEY OF SOUTH AFRICA

MEMOIR NO. 23

THE
GENERA OF SOUTH AFRICAN
FLOWERING PLANTS

SECOND EDITION



By E. P. PHILLIPS



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THE GENERA OF SOUTH AFRICAN
FLOWERING PLANTS



UNION OF SOUTH AFRICA

DEPARTMENT OF AGRICULTURE

DIVISION OF BOTANY AND PLANT PATHOLOGY

Botanical Survey Memoir No. 25

The Genera of South African Flowering Plants

by

E. PERCY PHILLIPS, M.A., D.Sc., F.R.S.S.Af.

*formerly Chief, Division of Botany and Plant Pathology and Director of the
Botanical Survey of the Union of South Africa*

SECOND EDITION

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THE SECRETARY FOR AGRICULTURE,
PRETORIA.

I have the honour to submit herewith for early publication the completed manuscript for the second edition of *The Genera of South African Flowering Plants* by Dr. E. P. Phillips. Its publication will be a noteworthy event in the history of South African botany.

Owing to the urgency in preparing and publishing the first edition, it was largely a compilation from the publications of earlier workers. The present revision, appearing as it will a quarter of a century after the first, naturally includes all available new records. In addition, however, Dr. Phillips has taken the opportunity in recent years of dissecting and examining representative material of all South African genera in order to amend his descriptions. By this means he has eliminated as many as possible of the inevitable, though rarely serious, shortcomings of the first edition.

The present work is of a high scientific standard and will reflect credit both on the Division of Botany and Plant Pathology and on the Department of Agriculture.

The Minister of Agriculture was good enough to approve of the retention of Dr. Phillips's services after his normal retirement on superannuation so that this work might be completed, and it would be greatly appreciated if the Minister would now consent to write a Foreword.

R. A. DYER.

Chief : Division of Botany and Plant
Pathology and Director of the Botanical
Survey of the Union of South Africa.

FOREWORD

It gives me great pleasure to write a foreword to this revision of *The Genera of South African Flowering Plants*, because the author, Dr. E. Percy Phillips, a son of the Union of South Africa, has, during his long career in the Public Service, steadily enhanced our reputation throughout the botanical world.

The first edition of the work appeared in 1926 as *Botanical Survey Memoir No. 10* and I am aware that it has been in constant use by foresters, teachers, students and various Government officials for whom it was more specially prepared. Prior to the publication of the first edition of this work, William Harvey's *Genera of South African Plants* of 1868 was the only comparable record of our flora. In it there were listed 1186 genera and this number had increased to 1645 by the time Dr. Phillips brought the records up to date in 1926. Since then, as the literature shows, there has been considerable activity in botanical exploration in the Union and South West Africa, and Dr. Phillips has assiduously gathered all available new data. In addition to the fact that many new records have been added to our flora since 1926, it is common knowledge that the first edition was sold out several years ago, which has caused a growing demand for a second edition.

As ministerial head of the Department of Agriculture I felt it in the best interest of the Union to authorise the re-employment of Dr. Phillips after his official retirement in order to bring this work of revision to fruition.

I need not enlarge on the interest our unique flora has aroused in the past, from times even before the first European settlement at the Cape. It is well known that this interest, horticultural, botanical and agricultural is constantly growing. It is vital, therefore, for the continued progress of these biological sciences to have a comprehensive summary and guide to the classification of our flora such as is presented by Dr. Phillips in this revision of his earlier work. It has my warm approval.

S. P. LE ROUX,
Minister of Agriculture.

Union Buildings,
Pretoria.

21 September 1950.

PREFACE

As stated in the preface to the first edition, that work was largely a compilation from available literature but, notwithstanding that, it served a useful purpose and all copies were soon sold out. The present edition deals with an additional 142 described genera not listed in the previous edition. With the exception of the group of genera related to *Mesembryanthemum*, I have personally examined nearly all the genera and drawn up the descriptions from my own examination. After the publication of the first edition in 1926, I began systematically to examine herbarium material and added notes of new generic records etc., but for six years from 1944, the work was interrupted as I was assigned to other duties.

As in the previous edition, the system followed is that by de Dalla Torre and Harms, the arrangement adopted in the National Herbarium. Where other authorities differ in the placing of genera a note has been made.

A new feature introduced is the references to the original publication of the genera and, where possible, the type species of the genus has been mentioned. Also, a useful addition is the bibliography, so far as I have been able to collect it.

I am much indebted to the Department of Agriculture for my appointment in 1949 as a temporary officer in the National Herbarium, Pretoria, where I was enabled to complete the work. I am deeply grateful to Dr. R. A. Dyer, the Chief of the Division of Botany and Plant Pathology for his advice and judgment on critical points. My thanks are also due to Dr. K. H. Barnard, the Director of the South African Museum, to Dr. L. Bolus, the Curator of the Bolus Herbarium, and to Prof. R. H. Compton, the Director of the National Botanic Gardens, for the loan of specimens.

Finally my thanks are due to my wife for typing a large part of the MSS., for preparing the index, and for assistance in the proof reading.

E. PERCY PHILLIPS.

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INTRODUCTION

Any student who has a keen desire to become acquainted with the flora of his district should begin to build up a herbarium of local plants. It is only by collecting specimens himself and preparing them for a herbarium that he will eventually acquire a sound working knowledge of the plants he comes across.

The proper use of the keys and descriptions given in the following pages will necessitate at least an elementary knowledge of the parts of the plant and of botanical terms. The latter cannot be avoided and in cases of doubt as to the meaning of any term, the student is referred to Jackson's *Glossary of Botanical Terms*—an invaluable book to anyone studying systematic botany.

The study of any local flora may be taken up with more than one object in view. The student may merely wish to know the names of the plants he comes across, he may be undertaking a general description of the vegetation of a particular area, or he may be interested in plants from some economic point of view. No matter from what aspect he approaches the study of plants, the formation of a small private herbarium will be of great assistance. The cost of maintaining a collection is trifling in comparison with the pleasure and use he will derive from it.

Before commencing a collection, however, it would be very desirable if a visit could first be paid to one or other of the large herbaria in order to form some idea of the methods of preserving plant specimens so as to be readily available for reference. It might be emphasized here that any herbarium, no matter how small, should not merely be a collection of dried plants with a botanical name attached. Every specimen should have attached to it as much information as it is possible to give. Do not commence botanical collecting by being merely a collector of plants, rather commence as a recorder of botanical information about plants, and remember that a dozen good specimens with reliable field notes attached is usually of far more scientific value than fifty specimens with merely the locality and date of collecting recorded. The resident collector can perhaps do more than anyone else to extend our knowledge of plants as they grow. He is on the spot and can observe the times of flowering, fruit formation, methods of seed dispersal, methods of pollination etc., in fact all the data connected with the life-history of the plant. The life-histories of most of the native plants of South Africa are unknown and a large field for original work in this respect remains to be explored. If every student besides his general collecting would concentrate on one species at a time and collect the plant in all stages he would materially benefit botanical science.

Because a herbarium may be put to some practical use it does not follow that it need not contain well-selected, well-prepared, and neatly mounted specimens. If one intends collecting plants either for oneself or for a public herbarium, one should collect good specimens. At the time of collecting a plant, bear in mind what will eventually become of it as a herbarium specimen and select specimens with this end in view; most good herbarium specimens are prepared in the field. After having carefully selected the specimens, the whole secret of ultimate success is (1) to place the specimens under some pressure as soon as possible after they are collected, and (2) to extract the moisture from them as rapidly as possible.

For any serious collecting one must be provided with (1) drying paper cut to a uniform size and in single sheets (a strong absorbent paper is sold for this purpose, but newspapers cut to 24 by 12 inches are quite suitable), (2) a collecting frame, (3) boards for use in drying specimens. The collecting frame may be made of stiff cardboard (24 by 12 inches), with a pair of straps attached or a wire collecting frame may be bought for a few shillings and a pair of straps riveted on. The drying boards should be slightly larger than the drying paper and should be in the form of a lattice, as this allows a free current of air between the driers and so facilitates the more rapid drying of the specimens.

When out collecting a supply of labels should always be carried and the notes written up on the labels at the time of collecting the specimens. Quite a suitable label for this purpose is a plain piece of white paper 5 by 3 inches with two slits for easy attachment to the specimen. After a day's collecting, the specimens gathered are placed between the drying papers in such a way that one specimen does not overlap the other, and between each set of specimens four or five sheets of driers are inserted and the bundle built up in this way is put between the lattice frames and placed in the sun to dry. As the specimens dry they contract and if allowed to contract too much bad herbarium specimens will result. To obviate this a weight (30—40 lb.) is placed on top of the bundle and the specimens thus kept under a uniform pressure. Each day the plants must be removed from the damp driers and placed between fresh sheets of paper and this process is repeated until the specimens are dry and crisp. It is not possible in a short introduction to go into much detail. Experience will show that different types of plants require different treatment to obtain the best results and the student will learn much if he has the opportunity of accompanying a trained collector in the field.

After the specimens are thoroughly dry they are then mounted for the herbarium. The mounting sheets should be of a good stiff cartridge paper. There are two methods commonly used for mounting specimens, viz.:—(1) the specimens are attached to the mounting sheets by strips of gummed paper, or (2) the specimens are glued to the sheets. If the latter method is used "Le Page's Liquid Glue", is a suitable medium for the purpose.

Each specimen should have a collector's number which must run consecutively from No. 1 onwards. Never use the same number twice for a plant. The collector's label with his number is placed at the right-hand bottom corner of the herbarium sheet.

After a collection has been mounted and labelled it is ready for placing in the herbarium. For this purpose double sheets of paper known as "species covers" are used to hold the mounted sheets. The species covers are sheets of plain white paper, slightly larger than the mounting sheets, and in them are placed all the specimens of the same species. The genus covers should be of stouter paper and contain the species of the same genus. On the outside of the genus cover in the bottom left-hand corner is printed the name of the genus, in the bottom right-hand corner the number of the genus as given in the following pages. The genus covers containing the specimens are then stored in a cabinet which should be dust- and insect-proof.

The above is a very brief outline of the procedure to be followed in commencing a herbarium and in conclusion it should again be emphasized that the beginner should visit some large herbarium and obtain further advice.

In preparing the keys to the families and genera given in the following pages only characters have been used which are usually visible to the naked eye if fresh specimens are handled, but for many families such as the *Gramineae*, *Cyperaceae* etc., a more minute examination is essential. For the smaller

details a pocket lens with a magnification of six diameters is quite sufficient. When handling a fresh specimen and using the key to determine to which family it belongs, the order of examination, if the plant is a dicotyledon, should be: (1) Leaves: are they opposite or alternate, simple or compound. (2) Flowers: (a) are a calyx and a corolla present, if so, are the petals free or joined, (b) has the flower only one perianth-whorl, and if so, is it of free or joined segments, (c) is the flower naked, i.e. both perianth-whorls absent. (3) Is the ovary superior or inferior. These simple characters, almost all seen without the aid of a lens, unless the flowers are very small, will place the plant in one of the 32 sections into which the key is divided. The next step is carefully to examine the ovary and to determine the number of the chambers and the number and position of the ovules. To do this the ovary is cut through transversely and examined with a pocket lens when the number of chambers may usually be easily counted. It may be necessary, however, to cut another section longitudinally to determine the attachment of the ovules.

When dealing with dried herbarium specimens the methods of examination are the same but the student should furnish himself with a simple dissecting microscope, a pair of dissecting needles, and a small scalpel. There are many types of dissecting microscopes on the market, but a simple stand with an adjustable arm to hold the lens and furnished with a focusing screw will be found to be quite suitable. Before taking a flower from the herbarium sheet, first examine it with a lens to see whether it appears to be in the right condition for dissection. Carefully detach the flower from the sheet and soak it in a small dish in warm water which drives out the air, softens the tissues, and enables the various organs to be easily separated. The amount of soaking required or whether the flower should be boiled for a few seconds will depend entirely on the type of flower and the method employed can only be learnt by experience. Always make a practice of dissecting a flower in a flat-bottom dish containing a little water as then the parts will float off and not be torn. If the flower has a tubular calyx first open this by slitting it up one side to expose the corolla. If the petals are joined, a similar slit will enable one to lay them open and so expose the stamens and gynaecium. Remember, the flower should be carefully dissected in definite stages and not torn to pieces. For a proper dissection, needles should have long fine points and the scalpel a keen edge. To make a neat dissection which will enable one to examine all the organs of the flower carefully needs practice, and it is only by practice and experience that the best method of dealing with a particular type of flower is gained.

KEY TO THE FAMILIES

1. Ovules naked, not enclosed in an ovary or infolded carpels 2
 Ovules produced in an ovary formed of joined carpels or of one carpel
 with joined margins 5

2. Leaves pinnately compound or dissected, forming a crown on top of
 the stem; stamens with numerous pollen-sacs **Cycadaceae**
 Leaves undivided, scattered along the branches of the stem, rarely
 leaves 2 and arising from the top of a turnip-shaped stem and some-
 times splitting length-wise; stamens with 1—9 pollen-sacs 3

3. Perianth present **Gnetaceae**
 Perianth absent 4

4. Seeds overtopping the fleshy or rudimentary carpels and surrounded
 by a fleshy aril; carpels with 1 ovule **Taxaceae**
 Seeds concealed between the carpels, without an aril; carpels usually
 with 2 or more ovules **Pinaceae**

5. Embryo with 1 cotyledon; vascular bundles scattered in the stem;
 leaves usually parallel veined; flowers usually 3-merous 6
 Embryo with 2 cotyledons, rarely with only 1 well developed cotyledon
 or undivided; vascular bundles nearly always arranged in a cylinder;
 leaves usually net-veined; flowers usually 4—5-merous 48

6. Perianth glumaceous or represented by linear scales or absent 7
 Perianth petal- or sepal-like or differentiated into a calyx and corolla,
 sometimes absent 18

7. Aquatic or marsh plants, with long erect stems (4 ft. or more); leaves
 strap-shaped; inflorescence cylindric, compact, bearing unisexual
 flowers **Typhaceae**
 Terrestrial, aquatic, or marsh plants; inflorescence various but never a
 long dense cylindric spike 8

8. Perianth glumaceous, or of 6 segments in 2 rows or flowers in the axil
 of a bract (valve), usually subtended by a bracteole (pale) and
 usually surrounded by 2 outer bracts (glumes)... .. 9
 Perianth 0, rarely represented by linear scales 11

9. Perianth of 6 segments in 2 rows; stems solid; leaf-sheath, when present,
 without a ligule 10
 Flower surrounded by bracts (valves and glumes) and a bracteole (pale);
 stems often hollow; leaf-sheath usually split and ending in a ligule
 Gramineae

10. Flowers bisexual; stamens usually 6; ovules 2 or more in each ovary-
 chamber **Juncaceae**
 Flowers unisexual; stamens 3; ovule solitary in each ovary-chamber
 Restionaceae

11. Flowers on a cylindric fleshy spadix, surrounded by a large trumpet-
 shaped spathe **Araceae**
 Flowers various, if in a spadix and surrounded by a spathe, then aquatic
 with the leaves in a rosette 12

12. Aquatic plants, either free-floating or submerged or with the leaves floating 13
 Terrestrial or marsh plants, sometimes found growing in water, but then the leaves never opposite and the ovary 1-chambered with a single ovule **Cyperaceae**
13. Free-floating plants represented by a thallus (not differentiated into stem and leaves); flowers very minute, situated in cavities on the thallus **Lemnaceae**
 Plants differentiated into stem and leaves 14
14. Gynaecium of 3—8 free carpels or, if of 1 carpel, then the ovule solitary; leaves opposite or alternate 15
 Ovary 1-chambered, with numerous basal ovules; leaves in a rosette **Araceae**
15. Flowers unisexual; stamen 1; carpels 1—4 16
 Flowers bisexual; stamens 2—6 or more; carpels 3—8 17
16. Stamens enclosed in a bottle-shaped spathe ... **Naiadaceae**
 Stamens naked **Potamogetonaceae**
17. Leaves with a stipule-like sheath; stamens 2 ... **Potamogetonaceae**
 Leaves without a stipule-like sheath; stamens 5—6 or more ... **Aponogetonaceae**
18. Flowers bisexual 19
 Flowers unisexual, sometimes polygamous 40
19. Ovary superior or carpels free 20
 Ovary inferior or half-inferior 32
20. Aquatic plants with floating or submerged leaves 21
 Terrestrial plants, sometimes found in damp or marshy places... .. 23
21. Perianth-segments 6, in 2 rows of 3 each; stamens 3; ovary 1-chambered; ovules many **Mayacaceae**
 Perianth-segments 1—4; stamens 4—6; gynaecium usually of free carpels, if of 1 carpel only, then ovule solitary... .. 22
22. Perianth of 4 green segments; stamens 4; ovule solitary in each carpel ... **Potamogetonaceae**
 Perianth of 1—3 equal or unequal segments; stamens 5—6 or more; ovules basal or parietal, 2—8 in each carpel ... **Aponogetonaceae**
23. Gynaecium of 3 almost free carpels; fruit elongated, cylindric and 3-lobed at the apex or the carpels breaking away from a 3-winged axis **Juncaginaceae**
 Ovary 1-chambered with 3 parietal placentas or 2—3-chambered (gynaecium never of almost free carpels); fruit a capsule or berry, never with 3 recurved apical lobes, very rarely with spreading lobes, but then perianth-segments with an auricle on the face 24
24. Fertile stamens 2—3, sometimes 3—4 barren stamens present 25
 Fertile stamens 6, rarely 5, but then the ovary is 2-chambered 30
25. Ovary 2—3-chambered, sometimes 2 of the chambers without ovules 26
 Ovary 1-chambered 28
26. Stamens 6, but only 2—3 fertile 27
 Stamens 3, all fertile **Haemodoraceae**

27. Petals distinctly clawed; leaves cauline; rootstock not a bulb
 Commelinaceae
 Petals not distinctly clawed; leaves radical; rootstock a bulb
 Liliaceae
28. Perianth differentiated into an evident calyx and corolla
 Xyridaceae
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29. Perianth-segments united to form a distinct tube... **Pontederiaceae**
 Perianth-segments free or almost so **Commelinaceae**
30. Perianth distinctly petaloid or differentiated into a calyx and corolla;
 leaves rarely tendril-tipped but, if so, then flowers not in a panicle
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 Perianth sub-petaloid or herbaceous, deciduous; climbing plants with
 tendril-tipped leaves sheathing at the base ... **Flagellariaceae**
31. Perianth not differentiated into a calyx and corolla **Liliaceae**
 Perianth differentiated into a calyx and corolla ... **Commelinaceae**
32. Ovary 1-chambered; ovules numerous, minute ... **Orchidaceae**
 Ovary 3- or 6-chambered; ovules 1 to many in each ovary-chamber ... 33
33. Fertile stamen 1 **Zingiberaceae**
 Fertile stamens 3, 5 or 6, very rarely 12—18 34
34. Stamens 5; seeds with an aril of golden woolly hairs
 Musaceae
 Stamens 3 or 6, sometimes 12—18 35
35. Stamens normally 6, sometimes 12—18 36
 Stamens 3 38
36. An aquatic herb **Hydrocharitaceae**
 Terrestrial plants 37
37. Plants with woody, often branched, stems; leaves crowded at the apex
 of the stems **Velloziaceae**
 Usually acaulescent plants; rootstock a bulb or corm, never with woody
 stems **Amaryllidaceae**
38. Perianth-tube prominently 3-angled or 3-winged; connective of anther
 produced at the apex into an entire or 2-partite crest
 Burmanniaceae
 Perianth-tube not prominently angled or winged; anthers not crested 39
39. Stamens opposite the outer perianth-segments; perianth-segments
 usually joined to form a tube, if free, then style-branches deeply
 forked, crested, or petaloid, or rush-like leafless plants, or perianth-
 segments narrowed into a filiform apex and the ovary with 2—3-
 ovules in each chamber **Iridaceae**
 Stamens opposite the inner perianth-segments; perianth-segments free
 and then the peduncle hairy or, if joined to form a short tube, then
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Hydrocharitaceae	
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Araceae	
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- | | | | | | | | | | |
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75. Flowers in lax panicles; ovary 4—5-chambered ... **Meliaceae**
 Flowers in racemes, often compact or in densely flowered panicles;
 ovary 1—3-chambered **Sapindaceae**
76. One perianth-whorl present 77
 Calyx and corolla present 81
77. Leaves usually 5—11-parted, if only 3-parted, then stamens 5 and ovary
 1-chambered with only one ovule **Moraceae**
 Leaves 3-foliate, if more, then stamens 8 to more or ovary more than
 1-chambered 78
78. Flowers sessile in the axils of the leaves, solitary or 2-nate, rarely on long
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[illegible]

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317. Leaves with 3—11 longitudinal nerves Melastomataceae
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318. Herbaceous plants Onagraceae
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319. Stamens 4—5 320
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320. Under surface of leaves and young branches covered with stellate hairs
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321. Petals linear-clavate, with revolute margins, much longer than the
 sepals; styles 2 Hamamelidaceae
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322. Leaves entire; ovules more than one in each ovary-chamber
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324. Petals many, joined at the base Aizoaceae
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 the placentas or gynaeceum of 2 or more free carpels 337
326. Stamens not inserted on the corolla-tube or adnate to the corolla at the
 base only 327
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327. Stamens twice as many as the corolla-lobes; leaves usually ericoid
Ericaceae
 Stamens as many as or less than the number of the corolla-lobes; leaves
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328. Small floating aquatic diaphanous herbs **Droseraceae**
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329. Small shrubs with ericoid leaves; anthers deeply bipartite or stigma
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330. Sepals 2 **Portulacaceae**
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331. Herbs **Caryophyllaceae**
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332. Stamens as many as the corolla-lobes 333
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333. Stamens 4; a dwarf bush with ericoid leaves **Scrophulariaceae**
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336. Shrubs, usually climbers; fruit a globose or pear-shaped berry
Apocynaceae
 Herbaceous plants; fruit a capsule **Gentianaceae**
337. Ovule solitary in each ovary-chamber 338
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338. Ovary 2-chambered 339
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339. Lateral sepals much enlarged and forming two coloured wings
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340. Stamens free from the corolla or adnate to the corolla at the base only
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341. Fruit fleshy **Ebenaceae**
 Fruit a capsule 342
342. Stamens as many as or twice as many as the corolla-lobes
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 corolla-tube split down in front **Scrophulariaceae**

362. Ovules usually 2 in each ovary-chamber, rarely 3 or 4 ... 363
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363. Corolla 1- or 2-lipped ... **Acanthaceae**
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364. Disc none ... **Oleaceae**
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365. Fruit a drupe or berry ... 366
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366. Ovules 4—6 in each ovary-chamber; seed often solitary
 Ovules numerous; seeds many ... **Myoporaceae**
 ... **Scrophulariaceae**
367. Fruit usually furnished with horns or spines or wings; plants with
 sticky glandular hairs ... **Pedaliaceae**
 Fruit usually without appendages; plants rarely with glandular hairs ... 368
368. Ovules and seeds few, usually 2—4... ... **Acanthaceae**
 Ovules and seeds many ... **Scrophulariaceae**
369. Styles free; a small succulent plant with the flowers surrounded by a
 rosette of leaves ... **Crassulaceae**
 Style simple; flowers not surrounded by a rosette of leaves ... 370
370. Posterior sepal large, produced into a hollow spur or sac
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371. Leaves ericoid; anthers opening by terminal pores or slits and usually
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372. Leaves whorled ... 373
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373. Flowers in terminal thyrsoid panicles ... **Loganiaceae**
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375. Stamens inserted in the corolla-throat or in the upper part of the corolla-
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 then corolla irregular ... **Scrophulariaceae**
376. Ovules 2—4 in each ovary-chamber, rarely more but, if so, then plants
 with bifid spines ... **Apocynaceae**
 Ovules many in each ovary-chamber ... 377
377. Calyx 4-fid, very rarely 5-fid but, if so, then large shrubs or trees
 Calyx 5-fid; a glabrous epiphytic shrub ... **Loganiaceae**
 ... **Scrophulariaceae**
378. Stamens indefinite ... 379
 Stamens 3—5 ... 380
379. Trees or shrubs; petals 4—5 ... **Myrtaceae**
 Succulent herbs; petals numerous ... **Aizoaceae**

380. Flowers in heads surrounded by involucrel-bracts **Dipsaceae**
 Flowers various but, if in heads, then heads not surrounded by a definite involucre ... 381
381. Ovules many in each ovary-chamber ... 382
 Ovule solitary in each ovary-chamber, or ovule and placenta not differentiated, but, if so, then stem parasites ... 383
382. Ovary 3—5-chambered, rarely 2-chambered, leaves without stipules **Campanulaceae**
 Ovary 2-chambered; leaves with interpetiolar stipules **Rubiaceae**
383. Stamens 3 ... **Valerianaceae**
 Stamens 4—6 ... 384
384. Ovary 1-chambered; stem-parasites ... **Loranthaceae**
 Ovary 2- or more-chambered; non-parasitic plants **Rubiaceae**
385. Flowers with 1 perianth or perianth absent ... 386
 Flowers with calyx and corolla ... 391
386. Perianth-segments, when present, free ... 387
 Perianth-segments joined ... 390
387. Ovary superior ... 388
 Ovary inferior... **Halorrhagidaceae**
388. Leaves verticillate; ovary 1-chambered; aquatic herbs **Ceratophyllaceae**
 Leaves opposite; ovary 5-chambered or gynaeceum of several free carpels 389
389. Gynaeceum of free carpels ... **Ranunculaceae**
 Ovary 5-chambered ... **Zygophyllaceae**
390. Ovary superior ... **Ceratophyllaceae**
 Ovary inferior... **Compositae**
391. Petals free ... 392
 Petals joined, at least at the base ... 398
392. Ovary superior ... 393
 Ovary inferior... **Halorrhagidaceae**
393. Stamens 8, 10 or 15 (2—3 times as many as the petals) or numerous; filaments occasionally without anthers ... 394
 Stamens 4—6, as many as or more than the number of petals, but not twice as many ... 397
394. Gynaeceum of many free carpels ... **Ranunculaceae**
 Gynaeceum of fused carpels, if carpels only 2 and easily separable, then flowers in a long dense terminal cylindric raceme ... 395
395. Styles 5 ... **Cunoniaceae**
 Style simple or styles joined to a central column, rarely style 0 ... 396
396. Styles adhering to a central column from which they separate in the fruiting stage ... **Geraniaceae**
 Style simple, rarely absent ... **Zygophyllaceae**
397. Stamens 4; ovary with a solitary ovule in each chamber **Meliaceae**
 Stamens 6; ovary with more than one ovule in each chamber **Cruciferae**

398. Ovary superior 399
 Ovary inferior... .. 405
399. Gynaecium of free carpels; stamens 8 **Crassulaceae**
 Gynaecium of fused carpels; stamens 2—5 400
400. Leaves digitately compound... .. 401
 Leaves not digitately compound, rarely trifoliolate but, if so, then seeds winged 402
401. Calyx campanulate, usually enlarged in the fruit; ovule 1 in each ovary-chamber **Verbenaceae**
 Calyx divided almost to the base; ovules many in each ovary-chamber **Pedaliaceae**
402. Stamens 2; corolla regular **Oleaceae**
 Stamens 4—5; corolla 2-lipped or oblique 403
403. Ovules 3 or more in each ovary-chamber 404
 Ovule 1 in each ovary-chamber **Labiataeae**
404. Calyx 5-toothed or spatheaceous; flowers rarely solitary **Bignoniaceae**
 Calyx lobed almost to the base; flowers solitary on long pedicels **Scrophulariaceae**
405. Flowers solitary or fascicled or the inflorescence corymbose **Valerianaceae**
 Flowers in heads 406
406. Anthers free **Dipsacaceae**
 Anthers joined **Compositae**
407. Leaves simple 408
 Leaves compound 727
408. Flowers with 1 perianth whorl or perianth absent or petals absent in the female flowers 409
 Flowers with a calyx and corolla or calyx in two distinct whorls ... 510
409. Perianth-segments, when present, free 410
 Perianth-segments joined 444
410. Ovary superior 411
 Ovary inferior... .. 440
411. Apparent flowers consisting of stamens (male flowers) and an ovary (female flower), the whole surrounded by an involucre; juice usually milky **Euphorbiaceae**
 Flowers normal, with or without a perianth 412
412. Flowers naked, without a perianth, rarely subtended by 2 minute bracts; perianth sometimes absent only in the female flowers 413
 Perianth present 418
413. Aquatic herbs... .. **Podostemonaceae**
 Herbs, subshrubs, or small trees 414
414. Flowers in heads joined together by glutinous hairs; heads surrounded by an involucre of bracts... .. **Urticaceae**
 Flowers not in heads surrounded by an involucre of bracts 415

415. Shrub; leaves grey on both sides **Chenopodiaceae**
 Small trees, shrubs, or herbs; leaves not grey, if whitish on the under
 surface, then seeds hairy 416
416. Ovules several; seeds with a basal tuft of hairs ... **Salicaceae**
 Ovule solitary; seed without a basal tuft of hairs... .. 417
417. Woody plants; fruit covered with wax **Myricaceae**
 Herbs, if somewhat woody, then leaves large and palmately veined
Piperaceae
418. Gynaecium of 2 or more free carpels, or carpels almost free 419
 Gynaecium of fused carpels; ovary 1- or more-chambered 421
419. Gynaecium of 2 carpels **Rosaceae**
 Gynaecium of more than 2 carpels... .. 420
420. Gynaecium globose, of 5—12 more or less distinct carpels arranged
 round a central axis **Phytolaccaceae**
 Carpels free, spirally arranged **Ranunculaceae**
421. Ovary 1-chambered with a solitary ovule 422
 Ovary 2- or more-chambered; if 1-chambered, then ovules 2 or more 432
422. Parasites with twining yellow stems; leaves not developed
Lauraceae
 Non-parasitic plants 423
423. Styles distinct or almost so 424
 Styles simple 430
424. Annual herbs, rarely small ashy-grey shrubs; ovule basal 425
 Trees or shrubs; ovules pendulous 429
425. Small ashy-grey shrubs; fruit fleshy **Chenopodiaceae**
 Herbs; fruit dry 426
426. Petiole expanded at the base into a membranous sheath
Polygonaceae
 Petiole not sheathing at the base 427
427. Perianth glumaceous **Amarantaceae**
 Perianth herbaceous 428
428. Fruit more or less warted or spiny **Phytolaccaceae**
 Fruit ribbed but not warted or spiny **Chenopodiaceae**
429. Stamens many **Rosaceae**
 Stamens 4—5 **Ulmaceae**
430. Stamens connate at the base; ovule at the apex of a long basal funicle
Amarantaceae
 Stamens not connate; ovule pendulous 431
431. Stamens adnate to the apex of the perianth-segments in spoon-like
 depressions... .. **Proteaceae**
 Stamens free from the perianth-segments **Moraceae**
432. Ovary on an evident gynophore **Capparidaceae**
 Ovary sessile 433

[illegible]

452. Style simple 453
 Styles free or almost so 456
453. Ovary on a long gynophore... .. **Capparidaceae**
 Ovary not on a long gynophore 454
454. Ovules many in each ovary-chamber **Lythraceae**
 Ovule solitary in each ovary-chamber 455
455. Perianth-tube cylindric; stamens in 2 rows, adnate to the perianth-tube
Thymelaeaceae
 Perianth-tube not cylindric; stamens in 1 row, hypogynous
Rhamnaceae
456. Herbs or small undershrubs; fruit a capsule or dividing into two
 1-seeded cocci 458
 Large shrubs or trees; fruit a large globose berry or drupe 457
457. Fruit a berry; ovules parietal **Flacourtiaceae**
 Fruit a drupe; ovule solitary, basal **Rhamnaceae**
458. Fruit a capsule **Aizoaceae**
 Fruit dehiscent into two 1-seeded cocci **Phytolaccaceae**
459. Flowers unisexual 460
 Flowers bisexual 479
460. Fruit a fig **Moraceae**
 Fruit a capsule or nut or fleshy or breaking up into separate carpels ... 461
461. Stamens in 2 or 4 whorls; the innermost whorl sometimes reduced to
 staminodes; anthers of outermost whorl opening by small lids
Lauraceae
 Stamens in 1 whorl, sometimes at the apex of a staminal-column, if
 in more than 1 whorl, then stamens many 462
462. Female flowers arranged in cones; male flowers in globose or conical
 heads **Protaceae**
 Female flowers not arranged in cones 463
463. Aromatic shrubs; leaves gland-dotted **Rutaceae**
 Herbs, shrubs, or trees, not aromatic; leaves not gland-dotted 464
464. Herbs or small undershrubs; if large shrubs, then leaves grey 465
 Trees or shrubs, sometimes climbing 470
465. Gynaecium of free or almost free carpels **Phytolaccaceae**
 Carpels not free or ovary sometimes 1-chambered 466
466. Stamens inserted on the calyx-tube... .. **Rosaceae**
 Stamens inserted at the base of the perianth-segments 467
467. Fruit exserted from the perianth or fruit surrounded by sticky hairs and
 enclosed in an involucre **Urticaceae**
 Fruit enclosed in the perianth or enlarged bracteoles 468
468. Stipules small, scarious, entire or ciliate, or petiole dilated at the base
 into a membranous sheath 469
 Stipules 0; petiole not sheathed at the base **Chenopodiaceae**
469. Stipules present **Caryophyllaceae**
 Petiole sheathed at the base... .. **Polygonaceae**

470. Carpels 2 or more, free or almost so ... 471
 Carpels not free; ovary sometimes 1-chambered ... 472
471. Ovule solitary in each carpel ... **Phytolaccaceae**
 Ovules many in each carpel ... **Sterculiaceae**
472. Ovules parietal ... **Flacourtiaceae**
 Ovules basal or apical ... 473
473. Stigma sessile, disc-like or of several radiating lobes or hemispherical,
 wider than the top of the ovary ... 474
 Stigma not sessile and disc-like ... 475
474. Stamens 3—5 ... **Icacinaeae**
 Stamens 10—15 ... **Monimiaceae**
475. Ovule solitary ... 476
 Ovules 2 ... 478
476. Stamens as many as the perianth-lobes ... **Urticaceae**
 Stamens more than the number of the perianth-lobes ... 477
477. Stamens 8, normally twice the number of the perianth-lobes
 Nyctaginaceae
 Stamens indefinite ... **Monimiaceae**
478. Stamens inserted in the calyx-throat ... **Rosaceae**
 Stamens inserted at the base of the perianth ... **Euphorbiaceae**
479. Stamens in 2—4 whorls; anthers of the outermost whorl opening by
 small lids ... **Lauraceae**
 Stamens in 1 whorl, if in more than 1 whorl, then stamens many or
 anthers not opening by apical lids ... 480
480. Corona present ... **Passifloraceae**
 Flowers without a corona ... 481
481. Ovary on a long cylindric gynophore which is longer than or as long
 as the stamens ... **Capparidaceae**
 Ovary sessile or shortly stalked ... 482
482. Ovules parietal ... **Flacourtiaceae**
 Ovules basal or apical ... 483
483. Ovules 2 or more ... 484
 Ovule solitary ... 486
484. Calyx deciduous leaving a narrow ring; stamens perigynous
 Rosaceae
 Calyx not deciduous; stamens hypogynous ... 485
485. Stamens as many as the number of the perianth-segments
 Amarantaceae
 Stamens more than the number of the perianth-segments
 Sterculiaceae
486. Styles free or almost so or style absent and stigmas free ... 487
 Style simple ... 491
487. Perianth-segments glumaceous ... **Amarantaceae**
 Perianth-segments herbaceous ... 488

542. Ovules suspended from a long basal funicle ... **Plumbaginaceae**
 Ovule basal or apical or on a free-central placenta ... 543
543. Calyx-tube long-cylindric ... **Thymelaeaceae**
 Calyx-tube lobed or divided almost to the base ... 544
544. Sepals 4 or 5; ovules basal or on a free-central placenta ... 545
 Sepals 6; ovules apical ... **Menispermaceae**
545. Stamens connate into a membranous tube ... **Sterculiaceae**
 Stamens free ... **Myrsinaceae**
546. Shrubs or small trees, with much reduced scale-like leaves
Tamaricaceae
 Leaves not much reduced and scale-like ... 547
547. Sepals 4 or calyx 4-lobed ... 548
 Sepals 5 or more, rarely sepals sometimes 2 or 3... 552
548. Ovules on long funicles; leaves heath-like ... **Frankeniaceae**
 Ovules sessile or shortly stalked; leaves not heath-like ... 549
549. Fruit a siliqua or silicula or breaking up into 2 cocci
Cruciferae
 Fruit a capsule, drupe, or berry ... 550
550. Ovary 3-chambered with 2 ovules in each chamber **Burseraceae**
 Ovary 1-chambered or more by the intrusion of the placentas ... 551
551. Ovary normally on a long or short gynophore or a disc present
Capparidaceae
 Ovary not on a gynophore; disc absent ... **Flacourtiaceae**
552. Filaments all connate, not connate into 3 or 4 bundles ... 553
 Filaments free, if somewhat connate or connate into bundles, then
 ovules on 3 parietal placentas ... 556
553. Sepals 3 ... **Canellaceae**
 Sepals 5 ... 554
554. Ovary inserted on one side of the calyx-mouth ... **Rosaceae**
 Ovary at the base of the calyx ... 555
555. Flowers distinctly zygomorphic ... **Leguminosae**
 Flowers regular or almost so ... **Sterculiaceae**
556. Calyx-segments 2—3 ... 557
 Calyx-segments 5 or more, rarely 3, but, if so, then woody plants ... 558
557. Ovules basal or on a free-central placenta... ... **Portulacaceae**
 Ovules parietal ... **Papaveraceae**
558. Flowers unisexual ... **Flacourtiaceae**
 Flowers bisexual ... 559
59. Ovules from the apex of a long basal funicle ... **Frankeniaceae**
 Ovules not suspended from a long basal funicle ... 560
560. Ovules on a free-central placenta ... 561
 Ovules basal, apical or parietal ... 562

579. Stamens inserted on the calyx-tube... .. **Lythraceae**
 Stamens hypogynous, free from the calyx-tube 580
580. Stamens as many as the petals **Pittosporaceae**
 Stamens twice as many as the petals 581
581. Stamens twice as many as the petals **Melanthaceae**
 Stamens numerous **Tiliaceae**
582. Filaments connate 583
 Filaments free, if connate at the base, then styles separating at maturity
 from a central axis 585
583. Filaments connate into a long cylindric tube 10-toothed at the apex,
 if connate into a short tube only, then stamens 8 **Meliaceae**
 Filaments connate at the base only; stamens 5 or 10—20 584
584. Stamens 5 **Linaceae**
 Stamens 10—20 **Sterculiaceae**
585. Ovules 2 in each ovary-chamber 586
 Ovule 1 in each ovary-chamber **Zygophyllaceae**
586. Large trees or small aromatic undershrubs; leaves pellucid-dotted
Rutaceae
 Herbs or shrubs, if aromatic, then leaves not pellucid-dotted 587
587. Fruit dividing at maturity into distinct carpels which separate from a
 cylindric axis; carpels not prickly **Geraniaceae**
 Fruit a prickly capsule **Tiliaceae**
588. Fertile stamens as many as the petals; if apparently less owing to the
 staminodes resembling the petals, then aromatic shrubs with gland-
 dotted leaves 589
 Fertile stamens more or less than the number of petals 680
589. Flowers unisexual 590
 Flowers bisexual 594
590. Ovule 1 in each ovary-chamber 591
 Ovules 2 in each ovary-chamber 593
591. Filaments usually connate, if free, then fruit a 3-valved capsule and
 petals not much longer than the sepals... .. **Euphorbiaceae**
 Filaments free... .. 592
592. Stamens opposite the petals... .. **Rhamnaceae**
 Stamens alternating with the petals **Hamamelidaceae**
593. Styles free or almost so **Euphorbiaceae**
 Style simple **Vitaceae**
594. Ovule 1 in each ovary-chamber 595
 Ovules 2 or more in each ovary-chamber 598
595. Ovule pendulous 597
 Ovule basal, erect 596
596. Herbs, if woody, then prostrate **Phytolaccaceae**
 Trees or woody shrubs **Rhamnaceae**

597. Small shrubs; leaves usually ericoid; venation not distinct
 Bruniaceae
 Trees or shrubs; leaves broad, distinctly pinnately veined
 Anacardiaceae
598. Ovules many in each ovary-chamber, more rarely ovules few ... 599
 Ovules 2 in each ovary-chamber ... 603
599. Corona present inside the petals ... **Asclepiadaceae**
 Corona absent ... 600
600. Shrubs armed with strong spines ... **Celastraceae**
 Small herbs, shrubs or trees, not spiny ... 601
601. Herbs or small undershrubs... **Lythraceae**
 Trees or large shrubs... 602
602. Calyx cup-shaped, toothed; stamens opposite the petals
 Heteropyxidaceae
 Sepals almost free; stamens alternating with the petals
 Pittosporaceae
603. Disc absent ... **Bruniaceae**
 Disc conspicuous, either entire or of 5 free glands ... 604
604. Small aromatic shrubs; leaves gland-dotted ... **Rutaceae**
 Trees or shrubs, sometimes climbing, not aromatic; leaves not gland-dotted ... 605
605. Climbing plants with tendrils ... **Vitaceae**
 Plants without tendrils ... 606
606. Acaulescent plants with deep underground stems—**Dichapetalaceae**
 Trees, or sometimes small shrubs, but always with evident stems ... 607
607. Ovules erect or pendulous ... **Celastraceae**
 Ovules parietal or axile ... **Pittosporaceae**
608. Fertile stamens less than the number of petals ... 609
 Fertile stamens more than the number of petals ... 613
609. Stamens inserted on the calyx-tube... **Lythraceae**
 Stamens free from the calyx... 610
610. Stamens 3; staminodes often 6 and 2-fid or 2-partite
 Olacaceae
 Stamens 2—4, sometimes 2—3 filaments without anthers but then
 flowers with a conspicuous disc; staminodes absent ... 611
611. Disc 0; ovary 2-chambered; ovules numerous in each ovary-chamber
 Scrophulariaceae
 Disc conspicuous; ovary 3-chambered; ovules 2—6 in each ovary-chamber ... 612
612. Flowers 4—5-merous... **Hippocrateaceae**
 Flowers 3-merous ... **Celastraceae**
613. Sepals 4; petals 4; stamens 6 ... **Cruciferae**
 Sepals and petals rarely 4 but, if so, then stamens not 6 ... 614
614. Aromatic shrubs; leaves with immersed pellucid glands, usually ericoid
 Rutaceae
 Non-aromatic shrubs; leaves rarely gland-dotted but, if so, then stamens
 inserted on the calyx-tube ... 615

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|--|-------------------------|-----|
| 615. Ovary winged | Malpighiaceae | |
| Ovary not winged | | 616 |
| 616. Filaments united, at least at the base | | 617 |
| Filaments free... .. | | 622 |
| 617. Ovary adnate to one side of the throat of the receptacle | Rosaceae | |
| Ovary at the base of the calyx | | 618 |
| 618. Flowers unisexual | Euphorbiaceae | |
| Flowers bisexual | | 619 |
| 619. Stamens twice as many as the petals | | 620 |
| Stamens 3—4 times as many as the petals... .. | Sterculiaceae | |
| 620. Filaments connate into a long cylindric tube 10-toothed above | Meliaceae | |
| Filaments connate at the base | | 621 |
| 621. Fruit an inflated membranous capsule | Meliaceae | |
| Fruit not a membranous capsule | Erythroxylaceae | |
| 622. Stamens inserted on the calyx-tube or perigynous | | 623 |
| Stamens free from the calyx... .. | | 625 |
| 623. Leaves with immersed pellucid glands | Heteropyxidaceae | |
| Leaves without pellucid glands | | 624 |
| 624. Ovule 1 | Rosaceae | |
| Ovules many | Lythraceae | |
| 625. Stamens numerous, if only 5, then fruits spiny or setose | | 626 |
| Stamens definite | | 627 |
| 626. Flowers bisexual | Tiliaceae | |
| Flowers unisexual | Euphorbiaceae | |
| 627. Shrubs with abortive spinescent branches | Olacaceae | |
| Trees or shrubs without abortive spinescent branches | | 628 |
| 628. Calyx urceolate or tubular, 4-toothed, persistent | Burseraceae | |
| Sepals free or calyx small, cupular and 5-lobed | Sapindaceae | |
| 629. Stem-parasites... .. | Loranthaceae | |
| Non-parasitic plants | | 630 |
| 630. Ovary 1-chambered | | 631 |
| Ovary 2- or more-chambered | | 634 |
| 631. Stamens numerous | Cactaceae | |
| Stamens 1—10 | | 632 |
| 632. Creeping herbs or aquatic or marsh plants | Halorrhagidaceae | |
| Woody plants | | 633 |
| 633. Stamens as many as the petals | Bruniaceae | |
| Stamens twice as many as the petals | Combretaceae | |
| 634. Ovule 1 in each ovary-chamber | | 635 |
| Ovules 2 or more in each ovary-chamber | | 644 |

635. Stamens numerous **Loasaceae**
 Stamens as many or twice as many as the petals 636
636. Stamens twice as many as the petals **Rosaceae**
 Stamens as many as the petals 637
637. Ovary 2-chambered 638
 Ovary 1- or 3—6-chambered 643
638. Flowers unisexual, if apparently bisexual, then the under surface of the
 leaves with stellate hairs **Hamamelidaceae**
 Flowers bisexual; stellate hairs absent 639
639. Flowers solitary or 3-nate 640
 Flowers in small heads, umbels, spikes, or racemes, with the spikes or
 racemes often paniced 641
640. Floating aquatics **Hydrocharitaceae**
 Not aquatic plants **Rhamnaceae**
641. Shrubs with the branches densely covered with small appressed leaves;
 flowers in small heads **Bruniaceae**
 Flowers in spikes, racemes, or umbels; leaves not small and closely
 packed on the branches 642
642. Fruit fleshy or membranous... .. **Araliaceae**
 Fruit splitting into 2 mericarps **Umbelliferae**
643. Ovules erect, basal **Rhamnaceae**
 Ovules pendulous **Bruniaceae**
644. Stamens 20—30 or numerous 645
 Stamens 3—12 646
645. Ovules 2—6 in each ovary-chamber **Lecythidaceae**
 Ovules many in each ovary-chamber **Myrtaceae**
646. Flowers unisexual, if occasional bisexual flowers present, then styles
 2 and free 647
 Flowers bisexual; style simple, rarely styles free but, if so, then flowers
 crowded in the axils of the upper leaves 648
647. Stamens as many as the petals **Saxifragaceae**
 Stamens not as many as the petals, if as many, then 1 or more or all
 the stamens rudimentary and plants furnished with tendrils
Cucurbitaceae
648. Ovary 4—6-chambered; ovules numerous in each ovary-chamber
Onagraceae
 Ovary 2—3-chambered; ovules few in each ovary-chamber
Bruniaceae
649. Ovary superior 650
 Ovary inferior... .. 717
650. Posterior sepal petaloid and produced into a very long spur
Balsaminaceae
 Corolla sometimes spurred or saccate, but the posterior sepal never
 produced into a long spur... .. 651
651. Ovary 1-chambered 652
 Ovary 2- or more-chambered or carpels free or ovary deeply divided
 and with a gynobasic style 673

652. Ovary open at the top; petals 2 **Resedaceae**
 Ovary completely closed, petals very rarely 2 653
653. Flowers unisexual 654
 Flowers bisexual 656
654. Ovule 1 **Menispermaceae**
 Ovules 3 or more 655
655. Ovules parietal; stamens alternating with the corolla-lobes
 Achariaceae
 Ovules on a free central placenta; stamens opposite the corolla-lobes
 Myrsinaceae
656. Shrubs or small trees; leaves minute and scale-like **Tamaricaceae**
 Leaves not minute and scale-like, if much reduced, then flowers zygomorphic or two of the sepals much enlarged and coloured 657
657. Stamens 10 **Leguminosae**
 Stamens less than 10 658
658. Root-parasites; fleshy plants with reduced leaves... **Orobanchaceae**
 Non-parasitic plants 659
659. Stamens more than the number of petals **Polygalaceae**
 Stamens as many as or less than the number of the corolla-lobes 660
660. Stamens less than the number of the corolla-lobes 661
 Stamens as many as the corolla-lobes 663
661. Corolla 2-lipped, spurred or saccate **Lentibulariaceae**
 Corolla 2-lipped or sub-equal, if 2-lipped then not spurred or saccate 662
662. Valves of fruit spirally twisted when mature **Gesneraceae**
 Fruit furnished with 2 long recurved horns **Martyniaceae**
663. Stamens free from the corolla or adnate to the corolla-tube at the base only... .. 664
 Stamens inserted on the corolla-tube or in the corolla-throat 668
664. Stamens alternating with the corolla-lobes **Icacinaceae**
 Stamens opposite the corolla-lobes... .. 665
665. A twining herb **Basellaceae**
 Herbs, shrubs or small trees, never twining 666
666. Styles free or divided into 5 stigmas **Plumbaginaceae**
 Style simple; stigma sometimes capitate 667
667. Woody plants **Myrsinaceae**
 Herbs **Primulaceae**
668. Stamens opposite the corolla-lobes... .. 669
 Stamens alternating with the corolla-lobes 670
669. Twining herbs; sepals 2 **Basellaceae**
 Erect herbs, rarely somewhat shrubby; sepals more than 2
 Primulaceae
670. A large tree **Icacinaceae**
 Herbaceous plants 671

671. Inflorescence a spike or head of inconspicuous flowers
 Plantaginaceae
 Inflorescence various, not a spike or head; flowers not inconspicuous 672
672. Aquatic or marsh plants **Gentianaceae**
 Terrestrial plants **Convolvulaceae**
673. Corona present within the corolla **Asclepiadaceae**
 Corona absent 674
674. Carpels free; each carpel bearing a style and stigma or a sessile stigma 675
 Carpels joined to form a 2- or more-chambered ovary or ovary deeply
 divided with a gynobasic style 677
675. Stamens numerous **Annonaceae**
 Stamens 5 or 10 676
676. Style simple **Apocynaceae**
 Styles free **Crassulaceae**
677. Flowers unisexual 678
 Flowers bisexual 681
678. Plants furnished with tendrils **Vitaceae**
 Plants without tendrils 679
679. Fruit a capsule **Euphorbiaceae**
 Fruit a drupe or berry 680
680. Stamens inserted in the corolla-throat **Aquifoliaceae**
 Stamens inserted at the base of the corolla or on the receptacle
 Ebenaceae
681. An herbaceous plant with much the general appearance of a liverwort;
 flowers sessile on a flat disc, surrounded by a rosette of leaves
 Crassulaceae
 Trees, shrubs, or herbs; flowers not arranged as above 682
682. Corolla-segments 3, if 5, then the 2 lateral sepals large and wing-like;
 filaments joined at the base **Polygalaceae**
 Corolla-lobes or segments usually 4 or 5, very rarely more, if only 3,
 then the calyx forming a cup at the base of the fruit 683
683. Corolla more than 5-parted, usually 10—24-parted 684
 Corolla 4—6-parted, rarely 3-parted, sometimes 1—2-lipped 687
684. Herbs covered with straight white spines **Hydrophyllaceae**
 Woody plants, often climbers, not spiny 685
685. Stamens 2 **Oleaceae**
 Stamens more than 2 686
686. Calyx 6—8-partite **Sapotaceae**
 Calyx 3—5-toothed or -partite **Boraginaceae**
687. Stamens more than the corolla-lobes 688
 Stamens as many as or less than the number of the corolla-lobes 690
688. Herbs **Oxalidaceae**
 Woody plants... .. 689

689. Ovule solitary in each ovary-chamber; leaves not ericoid, if ovules 2,
then calyx forming a cup at the base of the fruit **Ebenaceae**
Ovules 2 or more in each ovary-chamber ... **Ericaceae**
690. Ovary 5—9-chambered, rarely 4-chambered, but the plants with milky
juice... .. 691
Ovary 2—4-chambered, rarely more, but then ovary deeply divided and
style gynobasic; juice not milky 693
691. Stamens opposite the corolla-lobes... .. **Sapotaceae**
Stamens alternating with the corolla-lobes 692
692. Stigmas 4—6, persistent in fruit **Aquifoliaceae**
Style simple **Pittosporaceae**
693. Stamens free from the corolla 694
Stamens inserted on the corolla-tube or in the corolla-throat 695
694. Ovule 1 in each ovary-chamber, rarely ovules 2, but then calyx forming
a cup at the base of the fruit **Ebenaceae**
Ovules many in each ovary-chamber **Pittosporaceae**
695. Stamens less than the number of the corolla-lobes, if as many, then
seeds winged 696
Stamens as many as the corolla-lobes 705
696. Stamens 2, corolla regular **Oleaceae**
Stamens 4 or 5, if 2, then corolla 1- or 2-lipped 697
697. Fruit fleshy **Myoporaceae**
Fruit a capsule, indehiscent or splitting into indehiscent nutlets ... 698
698. Fruit a capsule 699
Fruit indehiscent or splitting into indehiscent nutlets 704
699. Ovules 2—10 in each ovary-chamber 702
Ovules solitary or ovules numerous in each ovary-chamber 700
700. Ovary-chamber divided by a spurious septum almost to the apex thus
appearing 4-chambered; capsule oblong, usually beaked
Pedaliaceae
Ovary 1—3-chambered, not divided by a spurious septum; capsule
various, rarely beaked 701
701. Capsule long-linear, splitting into 2 spirally twisted valves
Gesneriaceae
Capsule not splitting as above **Scrophulariaceae**
702. Flowers zygomorphic 703
Flowers regular **Bruniaceae**
703. Stamens as many as the corolla-lobes; seeds winged
Bignoniaceae
Stamens less than the number of the corolla-lobes; seeds not winged
Acanthaceae
704. Fruit indehiscent or tardily dehiscent, usually armed or winged
Pedaliaceae
Fruit splitting into indehiscent nutlets **Verbenaceae**
705. Ovules many or numerous in each ovary-chamber 706
Ovule 1 or few in each ovary-chamber 709
706. Herbs with a basal rosette of leaves **Gentianaceae**
Herbs or shrubs; leaves not in a basal rosette 707

	Flowers rarely in heads but, if so, then involucre absent	...	...	...	then leaves ericoid and a definite	...	...	...	...	725
725.	Ovules on a free-central placenta; fruit a berry	...	...	...	...	Myrsinaceae	...	...	...
	Ovules pendulous or axile; fruit a capsule or breaking up into indehiscent cocci	...	...	...	...	...	...	...	...	726
726.	Ovules pendulous	...	...	...	...	Bruniaceae	...	...	...
	Ovules axile	...	...	...	...	Campanulaceae	...	...	...
727.	Perianth in 1 whorl or perianth absent	...	...	...	...	...	...	...	...	728
	Calyx and corolla present	...	...	...	...	...	...	...	...	740
728.	Perianth, when present, of free segments	...	...	...	...	...	...	...	...	729
	Perianth, when present, of joined segments	...	...	...	...	...	...	...	...	735
729.	Ovary superior	...	...	...	...	...	...	...	...	730
	Ovary inferior...	...	...	...	...	Umbelliferae	...	...	...
730.	Aquatic herbs; flowers unisexual	...	...	...	...	Hydrostachyaceae	...	...	...
	Herbs or woody plants, sometimes found in wet places; flowers bisexual	...	...	...	...	...	...	...	...	731
731.	Ovary 1-chambered; ovules 1—2	...	...	...	...	...	...	...	...	732
	Ovary 2-chambered or gynaecium of free carpels; ovule solitary in each ovary-chamber	...	...	...	...	...	...	...	...	733
732.	Stamens sessile on the perianth-segments	...	...	...	...	Proteaceae	...	...	...
	Stamens free from the calyx and corolla	...	...	...	...	Leguminosae	...	...	...
733.	Ovary 2-chambered	...	...	...	...	Sapindaceae	...	...	...
	Gynaecium of free carpels	...	...	...	...	...	...	...	...	734
734.	Carpels 2	...	...	...	...	Rosaceae	...	...	...
	Carpels many	...	...	...	...	Ranunculaceae	...	...	...
735.	Ovary superior	...	...	...	...	...	...	...	...	736
	Ovary inferior...	...	...	...	...	...	...	...	...	739
736.	Leaves digitately compound...	...	...	...	...	...	...	...	...	737
	Leaves pinnately compound or 2-foliolate...	...	...	...	...	...	...	...	...	738
737.	Gynaecium of 5 nearly free carpels; gynophore 0; filaments connate	...	...	...	...	Sterculiaceae	...	...	...
	Gynaecium syncarpus; ovary on a gynophore; filaments free	...	...	...	...	Capparidaceae	...	...	...
738.	Ovule 1	...	...	...	...	Rosaceae	...	...	...
	Ovules 2 or more	...	...	...	...	Leguminosae	...	...	...
739.	Anthers connate round the style	...	...	...	...	Compositae	...	...	...
	Anthers free	...	...	...	...	Hernandiaceae	...	...	...
740.	Petals free	...	...	...	...	...	...	...	...	741
	Petals joined	...	...	...	...	...	...	...	...	789
741.	Ovary superior	...	...	...	...	...	...	...	...	742
	Ovary inferior...	...	...	...	...	...	...	...	...	787
742.	Fruits on long filiform peduncles, often up to 3 in. long	...	...	...	...	Ranunculaceae	...	...	...
	Fruits not as above	...	...	...	...	...	...	...	...	743

743.	Ovary 1-chambered or gynaecium of free carpels...	...	...	...	744
	Ovary 2—10-chambered	...	...	...	762
744.	Ovary 1-chambered	...	...	...	745
	Gynaecium of 2 or more free carpels	...	...	...	757
745.	Ovule solitary...	...	...	...	746
	Ovules 2 or more	...	...	...	747
746.	Disc fleshy, annular or crenate or of 5 scales, if inconspicuous then ovule suspended from a basal funicle	...	...	Anacardiaceae	
	Disc inconspicuous, ovules parietal	...	...	Leguminosae	
747.	Corolla irregular or zygomorphic	...	...	...	748
	Corolla more or less regular	...	...	...	749
748.	Sepals 2; stamens 6 in 2 bundles; herbs	...	...	Papaveraceae	
	Sepals 5, often variously connate; stamens usually 10 or many, if fewer than 10, then woody plants	...	...	Leguminosae	
749.	Plants with tendrils	...	...	Passifloraceae	
	Plants without tendrils	...	...	...	750
750.	Sepals 3 or 4; petals usually 4	...	...	...	751
	Sepals 5, often variously connate; petals 5	...	...	...	753
751.	Trees with spiny branches; stamens 4 or 8	...	...	...	752
	Herbs, rarely undershrubs or small trees but, if so, then stamens 10 to indefinite	...	...	Capparidaceae	
752.	Stamens 4	...	...	Rutaceae	
	Stamens 8	...	...	Burseraceae	
753.	Fruit a fleshy drupe	...	...	...	754
	Fruit a pod or capsule	...	...	...	755
754.	Ovary 1-chambered; ovules several...	...	...	Leguminosae	
	Ovary more than 1-chambered, if only 1-chambered then ovules 2 and leaves 1—3-foliate	...	...	Rutaceae	
755.	Fruit a bladderly capsule	...	...	Sapindaceae	
	Fruit a pod or capsule, but capsule not bladderly...	...	...	...	756
756.	Stamens 5, alternating with 5 staminodes; fruit a silique-like capsule	...	...	Moringaceae	
	Stamens 10 or numerous, if less than 10 then fruit a pod	...	...	Leguminosae	
757.	Herbs	...	...	...	758
	Woody plants...	...	...	...	760
758.	Aromatic plants; leaves gland-dotted	...	...	Rutaceae	
	Non-aromatic plants; leaves not gland-dotted	...	...	...	759
759.	Carpels 2, if many, then flowers perigynous and with 5 bracts adnate to the calyx and alternating with the lobes...	...	...	Rosaceae	
	Carpels many; flowers hypogynous	...	...	Ranunculaceae	
760.	Leaves gland-dotted	...	...	Rutaceae	
	Leaves not gland-dotted	...	...	...	761
761.	Fruit a velvety capsule	...	...	Connaraceae	
	Fruit succulent or of 1-seeded achenes	...	...	Rosaceae	

762. Stamens as many as the petals 763
 Stamens more or less than the number of petals 769
763. Leaves gland-dotted **Rutaceae**
 Leaves not gland-dotted 764
764. Climbing plants with tendrils **Vitaceae**
 Plants without tendrils 765
765. Herbs **Cruciferae**
 Woody or subwoody plants 766
766. Flowers solitary or 2-nate, on long peduncles **Sterculiaceae**
 Flowers not solitary or 2-nate 767
767. Climbing shrubs **Vitaceae**
 Trees or erect shrubs... .. 768
768. Flowers regular **Meliaceae**
 Flowers irregular **Melanthaceae**
769. Stamens less than the number of the petals 770
 Stamens more than the number of the petals 771
770. Disc unilateral or semi-annular; fruit a woody or papery capsule; seeds
 not winged **Melanthaceae**
 Disc 4—6-lobed; fruit a membranous capsule, leaving the dissepiments
 attached to the persistent axis **Meliaceae**
771. Filaments united into a staminal-tube bearing free filaments on its sur-
 face; epicalyx present **Malvaceae**
 Filaments sometimes united but not bearing free filaments on its surface;
 epicalyx absent 772
772. Ovary 5—10-chambered 773
 Ovary 2—4-chambered 780
773. Ovules 8 or more in each ovary-chamber 774
 Ovules 2 or 1 in each ovary-chamber 777
774. Flowers solitary 775
 Flowers paniced **Meliaceae**
775. Epicalyx of 5—20 segments **Malvaceae**
 Epicalyx absent 776
776. Fruit large, oblong in outline, woody, indehiscent, filled with pulp
Bombacaceae
 Fruit a capsule, densely villous **Zygophyllaceae**
777. Herbaceous plants, rarely woody at the base **Geraniaceae**
 Trees or woody shrubs 778
778. Leaflets with immersed glands, especially on the margins
Rutaceae
 Leaflets without immersed glands 779
779. Leaves 2-foliolate **Zygophyllaceae**
 Leaves pinnate **Meliaceae**
780. Herbs, not climbers **Cruciferae**
 Woody plants, if subherbaceous, then climbers with a bladdery capsule 781

781. Filaments connate; fruit never a bladderly capsule **Meliaceae**
 Filaments free, if connate at the base, then fruit a bladderly capsule ... 782
782. Ovule solitary 783
 Ovules 2 or more 785
783. Stamens 4 **Meliaceae**
 Stamens more than 4... ... 784
784. Stamens up to twice as many as the petals ... **Sapindaceae**
 Stamens more than twice as many as the petals ... **Anacardiaceae**
785. Leaves with immersed glands **Rutaceae**
 Leaves without immersed glands 786
786. Calyx urceolate or tubular, 4-toothed ... **Burseraceae**
 Calyx deeply divided or sepals almost free, if campanulate then 5-lobed
Sapindaceae
787. Flowers solitary; ovary 5—10-chambered ... **Rosaceae**
 Flowers in umbels, spikes, or racemes; the spikes or racemes sometimes
 paniced 788
788. Fruit fleshy **Araliaceae**
 Fruit breaking up into 2 indehiscent mericarps ... **Umbelliferae**
789. Dioecious trees **Euphorbiaceae**
 Shrubs or herbs, if trees, then not dioecious 790
790. Ovary superior 791
 Ovary inferior... ... 796
791. Corolla 2-lipped; stamens 2... ... **Lentibulariaceae**
 Corolla regular or subregular; stamens 2 to many 792
792. Leaves bipinnate; ovary 1-chambered ... **Leguminosae**
 Leaves pinnate or digitately compound; ovary 2—5-chambered ... 793
793. Ovary 2—4-chambered; stamens 2—5 794
 Ovary 5-chambered; stamens 10 ... **Oxalidaceae**
794. Stamens 2 **Oleaceae**
 Stamens 5 795
795. Small undershrubs; leaves pinnately divided ... **Convolvulaceae**
 Robust woody shrubs; leaves 3-foliate ... **Bignoniaceae**
796. Flowers solitary, fascicled, or inflorescence corymbose
Valerianaceae
 Flowers in heads **Dipsacaceae**

1. CYCADACEAE

Plants dioecious. *Male cones* 1 or more, terminal or subterminal, composed of an axis bearing numerous thickly coriaceous or fleshy flat or variously peltate scales (sporophylls), bearing on the under surface crowded 1-theous pollen-sacs. *Female cones* terminal or subterminal, composed of an axis bearing flat or thickened variously peltate scales (sporophylls), or less often of flat blades crowded round the apex of the stem, bearing on the under surface 2 inverted ovules (or in *Cycas* several). *Seed* large, drupaceous, with a more or less fleshy outer coat and a crustaceous or bony inner coat; cotyledons 2.

Shrubs or small trees, with a thick simple, rarely forking, stem crowned with a terminal tuft of leaves, or stemless with the leaves arising from a tuberous simple or branched underground stem; leaves in alternate series of short coriaceous scales and of palm-like pinnate, rarely 2—3-pinnate, fronds, with membranous or coriaceous often marginally toothed leaflets, which are usually many-nerved, with the nerves parallel, rarely anastomosing, sometimes 1-nerved.

Genera 9, with about 80 species, found mostly in Africa, Australia, and South America.

Leaflets with a prominent midrib and spreading forked lateral nerves;
upper leaves connate at the base and decurrent on the rachis

1. *Stangeria* T. Moore

Leaflets without a distinct midrib; nerves parallel with the margins;
leaflets never connate at the base ...

2. *Encephalartos* Lehm.

2 1. STANGERIA T. Moore in Hook. Journ. Bot., vol. 5, p. 228 (1853)

Male cones cylindric; scales in many rows, densely imbricated; pollen-thecae stipitate. *Female cones* shorter than the male cones, shortly pedunculate, ovoid-ellipsoid, densely tomentose; scales in many rows, imbricated. *Ovules* subglobose, at the base of the scales. *Seed* subglobose, with a dark red fleshy outer coat.

Stem subterranean, simple or branched; leaves few, long-petiolate, pinnate; pinnae opposite or alternate, linear-lanceolate, obtuse or acute, sometimes acuminate, serrated or subcrenate on the margins, rarely pinnatifid, with a conspicuous midrib and numerous spreading forked lateral veins.

A monotypic endemic genus, extending in the coastal belt from Port Alfred to southern Zululand. (Type: *S. paradoxa* T. Moore)

5 2. ENCEPHALARTOS Lehm., Pugill., vol. 6, p. 3, t. 1—5 (1834)

Male cones pedunculate, ovoid or cylindric; scales in many rows, imbricated, often narrowed at the apex; pollen-thecae very numerous on the under surface. *Female cones* sessile or shortly pedunculate, ellipsoid or oblong in outline, sometimes up to 3 ft. long and weighing up to 75 lb., sometimes completely enveloped by woolly hairs; scales more or less truncate at the top and often coarsely wrinkled. *Ovules* 2, sessile, ovoid. *Seed* with a yellow or red fleshy outer coat.

Trees with a cylindric trunk, or sometimes stem subterranean, simple or sometimes branched; stems covered with scales and the scars of fallen leaves; leaves petioled, pinnate, arranged at the top of the stems; leaflets sessile, rigid, entire, spinose or spinose-toothed, often pungent-pointed, without a midrib; lower leaflets sometimes gradually reduced to prickles.

An African genus of about 20 species; 13 species described from South Africa, extending from the Uitenhage district, through the eastern districts into Natal and Zululand; some are found in the more inland districts. (Type: *E. caffra* (Thunb.) Lehm.)

2. TAXACEAE

Plants dioecious, very rarely monoecious. *Male cones* mostly catkin-like, sometimes externally only slightly differentiated from the vegetative branches, simple or compound, terminal or axillary, solitary or fascicled, bracteate or ebracteate at the base; fertile scales bearing basi-dorsally 2—8 pollen-sacs, squamiform or more or less differentiated into a claw or stalk and a blade; blade large and projecting beyond the pollen-sacs, or transverse to the stalk (peltate), or very much reduced, when the scales with their pollen-sacs assume the appearance of typical angiospermous stamens. *Female cones* usually much reduced, terminal or axillary; lower scales barren, with the upper or only the uppermost fertile, always simple, each bearing 1 ovule (very rarely 2), or all barren and supporting a solitary terminal ovule. *Ovules* usually more or less exceeding its scale, sometimes long-exserted, rarely quite enclosed by the cone. *Mature cones* usually little altered, or the axis or, also the scales, becoming more or less fleshy. *Seed* usually exserted; testa coriaceous to woody, with or without an outer covering (*epimatium*) which is either free or more or less fused with the testa and varies from membranous to leathery or fleshy.

Shrubs or trees; leaves usually spirally arranged, scale-like, or linear to lanceolate, rarely ovate, always evergreen.

Genera 10, with over 100 species, mostly in the tropics and southern temperate zone; few in the northern hemisphere.

13 **PODOCARPUS** L'Hérit. ex Pers. Syn., vol. 2, p. 580 (1807)

Plants dioecious, very rarely monoecious. *Male cones* usually axillary, bracteate at the base, sessile or peduncled; scales numerous, spirally arranged, with 2 pollen-sacs near the base. *Female cones* terminal or axillary, usually reduced to a few sterile lower scales which are more or less fused with each other and the axis and 1—2 terminal fertile scales, the whole plexus becoming ultimately fleshy (receptacle), rarely spike-like with few to numerous usually distant fertile scales; scales spirally arranged or opposite in decussate pairs; the lower scales often with a foliaceous blade; the upper scales squamiform. *Ovules* solitary, adnate to the face of the fertile scale, and usually much exceeding it, inverted and enclosed in a false aril (*epimatium*) arising from the face of the scale and adnate to the single integument. *Seed* deciduous together with the fleshy receptacle or with the unmodified remainder of the strobile or falling from the scales of the persistent axis of the strobile; testa and false aril (rarely also the fertile scale) forming a coriaceous or externally fleshy and internally woody shell; embryo axile; cotyledons 2.

Shrubs or large trees; leaves squamiform or linear or lanceolate to ovate, usually spirally arranged, rarely opposite; male cones solitary or clustered or disposed in compound inflorescences, rarely apical; seeds and receptacles, where present, greenish or brown, or sometimes vividly coloured, the former always conspicuously exposed.

Species about 70, mostly in the mountain forests of the tropics; a few in the temperate regions of the southern hemisphere and in Japan; 6 species extending from the Transvaal, Zululand, and Natal, through the coastal belt to the Cape Peninsula. (Type: *P. elongatus* (Ait.) L'Hérit.)

3. PINACEAE

Plants dioecious or monoecious. *Male cones* mostly catkin-like, terminal, mostly solitary, rarely spicate, bracteate or ebracteate at the base; scales bearing basi-dorsally 2—15 pollen-sacs, squamiform or more or less differentiated into a claw or stalk and a variously modified and often much reduced blade. *Female cones* terminal or axillary; scales very numerous or few, sometimes only part of them fertile, simple or with a scale or ligule-like appendage (ovuliferous scale) on the upper side; the fertile scales bearing 1—8 ovules direct or on the ovuliferous scale. *Ovules* erect or more or less inverted, always shorter than their scales and covered by them; integument 1. *Mature cones* mostly developed as typical "cones" with enlarged hardened scales, or the scales proper arrested and their appendages enlarged, more rarely the mature scales fleshy and the cone, owing to the fusion of the scales, berry-like. *Seed* always enclosed, winged by the adhesion of a portion of the ovuliferous scale, or by wing-like expansions of the testa; testa crustaceous to woody, without any appendages.

Shrubs or trees; leaves spirally arranged or in whorls, needle-like or linear or lanceolate to ovate, or squamiform.

Genera 25—30, with between 250—300 species, mostly in the temperate zone of the northern hemisphere.

38 WIDDRINGTONIA Endl., Gen. Plant. Suppl., vol. 2, p. 25 (1842)

Plants dioecious (always?). *Male cones* small, terminal, mostly on short lateral branchlets; scales decussate, rhomboid-deltoid, produced into a beak or (upper scales) a short point or obtuse, with 2 pollen-sacs at the base. *Female cones* small, scattered along elongated shoots, singly or in dense clusters, rarely racemose; scales opposite in 2 alternating pairs, divaricate at the time of pollination then closing up, corky-coriaceous, apiculate. *Ovules* 3 or more at the base of each scale. *Mature cones* woody, ovoid or globose, opening with 4 very thick erect valves, corresponding to the 4 scales. *Seed* free, ovoid or trigonous, winged; testa crustaceous, cotyledons 2.

Evergreen trees or shrubs; leaves passing from a spiral arrangement in the juvenile state and in the long shoots to a strictly decussate arrangement in the adult state, needle-shaped in the juvenile form, squamiform and tightly oppressed in the adult; cones the size of a small plum, usually clustered.

An African genus of 6 species, all found in South Africa, extending from the Cedarberg Mountains in the Clanwilliam district, then through the eastern districts to Natal and the Transvaal. (Type: *W. cupressoides* (L.) Endl.)

4. GNETACEAE

Plants monoecious or dioecious. *Flowers* unisexual or pseudobisexual. *Male flowers* with an envelope of 1 or 2 imbricating whorls of scales; scales connate at the base or free. *Stamens* 1—8; filaments connate at the base around a central superior barren ovule or 0; anthers sometimes sessile or subsessile on the summit of a stout central axis. *Female flowers* with an ovary-like utricle. *Ovules* naked, erect, orthotropous, with a single integument produced into an elongated tubular micropyle and protruding through the mouth of the utricle, with or without an aril. *Seed* with endosperm, enclosed at maturity in the hardened utricle, which is either differentiated into a fleshy outer and a hard inner layer or entirely coriaceous and sometimes 2-winged; embryo straight, with 2, rarely 3, cotyledons.

Erect or scandent virgate or leafy shrubs, trees, or woody climbers, or a woody plant of unique form consisting of a stout tuberous hypocotyl and an early arrested depressed stem apex; leaves 2 or more, opposite, rarely in whorls of 3, simple; flowers in spikes.

Genera 3, with 50—60 species, mainly in the tropics and subtropics of both hemispheres.

NOTE.—In the *Flora Capensis* a new family *Welwitschiaceae* with the single genus *Welwitschia* is separated from *Gnetaceae*—E. P. P.

48 WELWITSCHIA Hook. f., Gard. Chron. p. 71 (1862)

(*Tumboa* Welw.)

Flowers unisexual or pseudobisexual. *Male* (pseudobisexual) flowers with an envelope of 2 imbricating whorls; scales of outer whorl 2, laterally placed, free, boat-shaped, keeled; scales of inner whorl obovate or subrotund, keelless, connate at the base. *Stamens* 6, exserted; filaments connate into a short tube at the base; anthers somewhat 3-lobed when mature, 3-theous, dehiscent by 3 slits from the summit. *Ovule* solitary, terminal, erect, orthotropous, imperfect, with the single integument produced into a tubular micropyle which expands at the tip into an exserted glandular papillose stigmatiform disc. *Female flowers* surrounded by an envelope; envelope bottle-shaped, contracted at the throat, formed of 2 laterally placed connate leaves which are compressed from back to front and with 2 lateral membranous wing-like expansions from the midribs. *Ovule* solitary, terminal, erect, orthotropous, perfect, with its single integument produced into a straight micropylar tube through the mouth of the envelope. *Seed* flattened, closely invested by the winged envelope; endosperm starchy; radicle erect; cotyledons 2, rarely 3, narrow-linear.

Plant body partly buried in the ground; leaves 2, rarely 3, thick, leathery, up to 12 ft. long; spikes in compound dichasial cymes (rarely solitary).

A monotypic genus found in the Namib region of South West Africa; also extends along the low coastal belt of Angola to south of Mossamedes. (Type: *W. mirabilis* Hook. f., *W. bainesii* (Hook. f.) Carr.)

5. TYPHACEAE

Plants monoecious. *Male flowers*:—*Perianth* 0 or of 3—6 scales or slender narrowly clavate threads or cuneate scales intermingled with the flowers. *Stamens* 2—7; filaments free or connate. *Ovary* 0. *Female flowers*:—*Perianth* of scales or fine hairs, sometimes accompanied by slender spatulate or clavate bracteoles. *Ovary* superior, sessile or stalked, 1-chambered, with a solitary pendulous ovule; style simple, terminal, persistent; stigma simple, elongate. *Fruit* sessile or stalked; pericarp thick or thin. *Seed* with endosperm; embryo cylindric.

Perennial aquatic or marsh herbs with creeping rhizomes; leaves alternate, in two ranks, linear or strap-shaped, sheathing at the base; inflorescence a dense globose head or cylindric spike; male inflorescence terminal; flowers minute.

Genera 2; species about 25, very widely dispersed.

49 TYPHA Linn., Sp. Pl., ed. 1, p. 971 (1753)

Male flowers irregularly intermingled with variously shaped scales or slender clavate curved threads. *Stamens* with their filaments variously connate; connective of anthers produced beyond the thecae. *Female flowers* ebracteolate or mingled with slender clavate or spatulate bracteoles and often with abortive clavate female flowers. *Perianth* composed of several very

fine simple or clavate hairs. *Ovary* stalked, at least after fertilization, narrow; style elongate, slender, erect; stigma linear or lanceolate. *Fruit* minute, stalked, ellipsoid or subcylindric. *Seed* subcylindric or narrowly ellipsoid.

Flowering stem erect, simple, terminated by the dense cylindric superposed unisexual flower spikes; floral bracts 0 or linear and deciduous or caducous.

Species about 20, widely distributed; 2 species found in South Africa wherever swamps occur. (Type: *T. angustifolia* Linn.)

6. POTAMOGETONACEAE

Flowers bisexual or unisexual, regular. *Perianth* simple and little developed or wanting. *Stamens* 1—4; anthers sessile. *Carpel* 1, with a 1-chambered ovary or carpels several and distinct or almost so, with a solitary pendulous or laterally fixed ovule in each ovary, very rarely ovules 2. *Fruit* with a succulent or membranous pericarp, 1-seeded, indehiscent. *Seed* without endosperm.

Perennial aquatic herbs, generally submerged, sometimes with long-stalked floating leaves.

Genera 9, species about 75, found in Africa, America, Australia, but generally distributed in temperate and subtropical regions.

- | | | | | | | | |
|---|-----|-----|-----|-----|-----|-----|------------------------------|
| 1. Flowers bisexual; stamens 2 or 4 | ... | ... | ... | ... | ... | ... | 2 |
| Flowers unisexual; stamen 1 | ... | ... | ... | ... | ... | ... | 3 |
| 2. Perianth-segments 4; stamens 4 | ... | | | | | | 2. <i>Potamogeton</i> Linn. |
| Perianth 0; stamens 2 | ... | ... | | | | | 3. <i>Ruppia</i> Linn. |
| 3. Gynaecium of 1 carpel; perianth 0 | ... | | | | | | 1. <i>Zostera</i> Linn. |
| Gynaecium of 3—4 carpels; perianth of scales or cup-shaped in the female flower and absent from the male flower | ... | ... | ... | ... | ... | ... | 4 |
| 4. Perianth absent in the male, cup-shaped in the female flower | | | | | | | 4. <i>Zannichellia</i> Linn. |
| Perianth of 1—3 scales in both sexes | | | | | | | 5. <i>Althenia</i> Petit. |

55

1. ZOSTERA Linn., Sp. Pl., ed. 1, p. 968 (1753)

Flowers unisexual. *Perianth* 0. *Male flowers* consisting of a single oblong laterally attached 1-thecous anther. *Female flowers* consisting of a single carpel, laterally attached near the apex and produced above into a filiform 2-branched style; ovule solitary, pendulous. *Fruit* an indehiscent pendulous nutlet. *Embryo* grooved.

Submerged marine plants with dark ribbon-like leaves; rootstock matted, creeping; stem compressed; leaves sheathing; stipules combining with the sheathing leaf-base; the male and female flowers on the membranous rhachis of a spike enclosed in the sheathing base of the floral leaf.

Species about 9, found on the coasts of Europe, Asia, America, Australia, and Africa; 3 species described from South Africa, found in lagoons. (Type: *L. marina* Linn.)

58

2. POTAMOGETON Linn., Sp. Pl., ed. 1, p. 126 (1753)

Flowers bisexual. *Perianth-segments* 4, green, valvate. *Anthers* 4, sessile. *Carpels* 4 (many abortive), sessile, with a single ovule in each ovary; stigma persistent, subsessile or decurrent, altering much in position in the ripened flower. *Fruit* a small drupe. *Seed* reniform.

Submerged water plants with creeping rootstocks; leaves terete or compressed, often floating, alternate or opposite, entire or toothed; stipules intrafoliaceous, free or adnate to the petiole; inflorescence a spike, with the peduncle surrounded at the base with a membranous sheath; flowers small; bracts 0.

Described species almost 100, cosmopolitan; 11 species recorded from South Africa, extending from the south-western district of the Cape Province to Natal and the Transvaal, and to many inland centres where vleis occur. (Type: *P. natans* Linn.)

59

3. *RUPPIA* Linn., Sp. Pl., ed. 1, p. 127 (1753)

Flowers bisexual. *Perianth* 0. *Stamens* 2; anthers 2-theous. *Carpels* 4; stigma sessile; ovule solitary. *Fruit* of 4 long-stalked ovoid or oblique-ovoid achenes on a common peduncle.

Submerged slender plants found in brackish water; leaves elongate, filiform, with a stipuliform sheath; flowers small, usually 2 together (2—6) within the leaf-sheath on a short peduncle, which mostly elongates and becomes straight or spirally twisted.

Species 2, found in temperate and tropical regions; 1 species recorded from the Cape Peninsula and the Humansdorp and Uitenhage districts. (Type: *R. maritima* Linn.)

62

4. *ZANNICHELLIA* Linn., Sp. Pl., ed. 1, p. 969 (1753)

Flowers unisexual. *Male flowers*:—*Perianth* 0. *Stamen* 1; filament slender; anther 2—4-theous. *Female flowers*:—*Perianth* membranous, cup-shaped, undivided. *Capels* usually 4, with a solitary pendulous ovule in each ovary; style long or short; stigma peltate, crenate. *Fruit* of 4, rarely less or more, long incurved achenes. *Seed* pendulous; embryo subcylindric, with the cotyledonary end twice folded on itself.

Slender submerged plants found in fresh-brackish or salt water; leaves mostly opposite, linear or capillary, with stipular sheaths; flowers small, in pairs or solitary.

Species described about 7, but all may be forms of one or two species, found in temperate and tropical regions; 1 species recorded from the Cape Peninsula and 1 from Namaqualand and Griqualand West. (Type: *Z. palustris* Linn.)

63

5. *ALTHENIA* Petit in Ann. Sc. Observ., vol. 1, p. 451 (1829)

Flowers unisexual. *Male flowers*:—*Perianth* of 3 minute scales. *Stamen* 1. *Female flowers*:—*Perianth* of 1—3 narrow hyaline entire or cut segments. *Gynaecium* of 3 carpels, with a solitary pendulous ovule in each ovary; styles filiform, gradually passing into the carpels; stigma large, oblique, capitate. *Mature carpels* lanceolate or oblong in outline, compressed, with a thickened or winged margin. *Seed* pendulous, oblong, compressed; embryo straight.

Aquatic herbs; leaves congested at the nodes, setaceous, dilated at the base, with the expanded portion produced into a broad concave ligule; flowers minute.

Species 2, natives of southern Europe; 1 species recorded from near Redhouse in the Uitenhage district and from the Humansdorp district. (Type: *A. filiformis* Petit.)

7. NAJADACEAE

Plants monoecious or rarely dioecious. *Male flowers*:—consisting of one terminal stamen enveloped in a close-fitting 2-lipped perianth; the whole enclosed in a bottle-like spathe. *Female flowers* without a perianth or perianth

very thin and adhering to the carpel. *Carpel* 1, with a solitary erect ovule in the 1-chambered ovary; stigmas 2—4. *Fruit* usually embraced by the leaf-sheath, a drupe. *Seed* without endosperm.

Aquatic plants found in fresh or brackish water; stem slender, much branched; leaves small, subopposite or whorled, linear, entire or toothed, sheathed at the base; flowers very small, solitary or in glomerules, borne at the base of the branches.

One genus with about 38 species found in temperate and tropical regions.

64 NAJAS Linn., Sp. Pl., ed. 1, p. 1015 (1753)

Characters of the family.

One species recorded from the Transvaal. (Type: *N. marina* Linn.)

8. APONOGETONACEAE

Flowers usually bisexual, sometimes unisexual. *Perianth* of 1—3 equal or unequal segments or 0. *Stamens* 5—6 or more; anthers 2-theous. *Gynaecium* of 2—8 free carpels, with 2—8 basal or parietal ovules. *Fruit* of 3 or more hardened follicles. *Seed* erect; endosperm 0.

Aquatic plants, with a tuberous rootstock; leaves either floating or erect, variable in shape; inflorescence a simple or bifid spike; flowers arranged unilaterally or distichously; young flowers often enclosed in a deciduous sheath.

Genus 1; species between 20—30, natives of Asia, Africa, and Australia.

65 APONOGETON Linn. f., Suppl., p. 32 (1781)

Flowers bisexual or rarely unisexual. *Perianth* of 3 equal or unequal lobes, free to the base; lobes oblong, spatulate, ovate, or obovate; perianth sometimes absent. *Stamens* 5—6; filaments usually flattened, sometimes terete; anthers oblong, 2-theous, opening by longitudinal slits. *Gynaecium* of 2—6 free carpels, each carpel narrowing into a flattened beak-like style; stigma simple, terminal, sometimes the stigmatic surface lateral on the style. *Ovules* 2—6 in each carpel, basal or parietal.

Leaves divided into a distinct petiole and blade or sometimes long-linear without a distinct petiole; blade, when present, oblong, oblong-lanceolate, elliptic, ovate, linear, or lanceolate; inflorescence a bifid linear or oblong spike, rarely not divided; flowers often subtended by 2 large bracts.

In South Africa 14—15 species recorded, found widely distributed wherever vleis occur. (Type: *A. monostachyon* L. fil.)

9. JUNCAGINACEAE

Plants sometimes dioecious. *Flowers* bisexual, unisexual, or polygamous. *Bracts* 0. *Perianth* of 6 segments in 2 whorls. *Stamens* 6 or 4; anthers subsessile, 2-theous, with extrorse dehiscence. *Carpels* 6 or 4, free or more or less connate; style short and stout or absent; stigma often plumose or papillous; ovule 1 in each carpel, basal, erect, anatropous. *Fruit* of distinct or connate carpels, with straight or recurved apices and sometimes with 2 hooked spurs at the base, dehiscent or indehiscent, sometimes 3 carpels barren. *Seed* without endosperm.

Herbs found in fresh-water and salt marshes; leaves mostly radical, linear, sheathing at the base; inflorescence a terminal raceme or spike.

Genera 4, with about 12 species found in the cold and temperate regions of the Old and New Worlds.

Perianth-segments 3 or 6, herbaceous, deciduous. *Stamens* 3—6 at the base of the perianth-segments and falling with them. *Carpels* 3—6 (3 often imperfect); stigmas sessile or subsessile, plumose. *Fruit* of 3—6 follicles separating from a central axis; follicles with recurved tips and spurred at the base. *Seed* erect; embryo straight.

Marsh herbs with flat or terete leaves; inflorescence a raceme or spike; bracts 0.

Species about 14, found in the temperate regions of both worlds; several of these species occur in Australia and 3 in South Africa extending from the Cape Peninsula to Natal. (Type: *T. palustris* Linn.)

10. ALISMATACEAE

Flowers regular, bisexual or rarely unisexual, with bisexual flowers. *Perianth* 2-seriate; the outer whorl green and sepal-like, imbricate, persistent; the inner whorl petaloid, imbricate, deciduous. *Stamens* hypogynous, 6 or more, rarely 3, free; anthers 2-theous, with extrorse dehiscence. *Gynaecium* of 6 or more (rarely 3) distinct carpels or the carpels sometimes united at the base; style persistent; ovule solitary in each ovary, rarely more, basal or on the inner angle. *Fruit* a bunch or whorl of achenes, rarely dehiscent at the base. *Seed* curved, with a horseshoe-shaped embryo, without endosperm.

Aquatic or marsh herbs; leaves basal, with elongated sheathing petioles and linear-lanceolate to ovate-rounded, often sagittate, blades; inflorescence a raceme or panicle; flowers often whorled.

Genera 12, with almost 20 species found mostly in the tropical and temperate regions of the northern hemisphere.

Leaf-blade ovate, sagittate; carpels 15—20 1. *Limnophyton* Miq.

Leaf-blade linear or linear-lanceolate; carpels 7—9

2. *Rautanenia* Buch.

72 1. LIMNOPHYTON Miq., Fl. Ind. Bat., vol. 3, p. 242 (1855)

Flowers polygamous, bisexual or male. *Perianth-segments* 6, in 2 series; the 3 outer herbaceous, persistent, at length reflexed; the 3 inner larger, petaloid, deciduous. *Stamens* 6; filaments linear, gradually widening to the base, glandular; anthers oblong, 2-theous, with the walls of the thecae reticulate. *Carpels* 15—20 or more; each carpel irregularly obovoid; style lateral, terete, persistent in the fruit; stigma capitate. *Fruit* a collection of drupes; individual drupes subglobose or obovoid, with a few fleshy ridges and blunt protuberances; mesocarp fleshy; endocarp crustaceous. *Embryo* curved.

Aquatic or swamp plants; leaves on long fleshy ribbed petioles; blade ovate, sagittate at the base; flowers verticillate on the culms, long pedicelled, each group surrounded at the base with an involucre of bracts.

Species 1, found in Asia and Africa; in South Africa recorded from the northern Transvaal. (Type: *L. obtusifolium* Miq.)

77 2. RAUTANENIA Buchenau, Bull. Herb. Boiss., vol. 5, p. 854 (1897)

Flowers unisexual by abortion. *Perianth* of 6 segments; the outer 3 persistent; the inner 3 deciduous. *Male flowers*:—*Stamens* 7, 8, or 9, more or less connate. *Carpels* abortive. *Female flowers* with abortive(?) stamens. *Carpels* 7, some-

times 9, often not all fertile; ovule solitary in each chamber. *Fruit* herbaceous, irregularly capitate. *Seed* erect, obovate, without endosperm.

Glabrous erect perennial herbs; leaves erect with a linear petiole and a linear or linear-lanceolate blade; inflorescence a panicle; bracts present.

A monotypic endemic genus recorded from South West Africa. (Type: *R. schinzii* Buchenau)

11. HYDROCHARITACEAE

Plants sometimes dioecious. *Flowers* regular, bisexual or more often unisexual. *Perianth* of 1—2 series of segments free to the base; outer series often green, valvate; the inner series petaloid, imbricate. *Stamens* 3—12, inserted at the base of the perianth; anthers 2-theous; staminodes sometimes present in the female flowers. *Ovary* inferior, 1-chambered, with many ovules on 3—6 (rarely fewer or more) parietal placentas which sometimes protrude nearly to the middle of the ovary; style usually divided into as many branches as there are placentas. *Fruit* various, often fleshy and indehiscent. *Seed* without endosperm; embryo straight.

Floating or submerged perennial herbs; leaves either all radical or cauline and alternate, opposite or whorled; flowers arranged in a bifid spathaceous bract or within 2 opposite bracts; male flowers usually more than 1; the female flowers solitary; spathes sessile or long-pedunculate.

Genera about 15, with over 50 species extending through the tropical and temperate regions of both hemispheres.

1. Flowers bisexual	4. <i>Ottelia</i> Pers.	2
Flowers unisexual ... ..	... ..
2. Salt-water herbs; male perianth in 1 row	1. <i>Halophila</i> Thouars	3
Fresh-water herbs; male perianth double ... ..	... ..
3. Male flower solitary in the spathe ...	2. <i>Hydrilla</i> L. C. Rich. ...	
Male flowers many in each spathe ...	3. <i>Lagarosiphon</i> Harv. ...	

85 1. HALOPHILA Thouars, Gen. Nov. Madag., p. 2 (1806)

Flowers unisexual. *Male flowers* pedicelled. *Perianth* 3-merous, in 1 row; segments subherbaceous. *Anthers* 3, subsessile, oblong-linear, alternating with the perianth-segments. *Ovary* 0. *Female flowers* sessile, with 3 minute segments. *Ovary* 1-chambered, with a long beak; styles 3, simple, long-filiform; ovules attached to 3 parietal placentas. *Fruit* included in the spathe, subglobose, crowned with a beak. *Seeds* many, subglobose; embryo thick.

Maritime herbs, submerged, with creeping stoloniferous stems and leafy at the nodes; leaves sessile or petioled, oval or oblong, apparently in pairs, with the petioles frequently enclosed at the base in 2 broad scales; spathes small, sessile between the leaves.

Species about 7, found on the coasts of Africa, India, Australia, and the Pacific Islands; 1 species in South Africa, recorded from Port Alfred and the Knysna district.

86 2. HYDRILLA L. C. Rich., Mem. Instit. Paris, vol. 12, pp. 9 et 61 (1811)

Flowers unisexual. *Male flowers* shortly pedicelled. *Perianth* double, 3-merous; outer segments ovate or obovate; inner segments narrower, scarcely longer. *Stamens* 3. *Ovary* 0. *Female flowers* sessile. *Perianth* with a long

filiform tube above the ovary. *Staminodes* 0. *Ovary* 1-chambered, with 3-parietal placentas. *Fruit* cylindric, with few seeds.

Submerged herbs, with branching stems and short verticillate leaves; spathes tubular, sessile in the axils of the leaves; flowers solitary in the spathes.

Species 2, found in the tropical and temperate regions of the Old World; 1 species recorded from the Transvaal and Natal. (Type: *H. ovalifolia* L. C. Rich.)

88 3. LAGAROSIPHON Harv., Hook. Journ. Bot., vol. 4, p. 230, t. 22 (1842)

Flowers unisexual. *Male flowers*:—*Perianth* 6 lobed; the 3 outer lobes slightly larger than the 3 inner. *Stamens* 3; staminodes 2—3. *Female flowers*:—*Perianth* 6-lobed; tube very slender; the 3 outer lobes slightly longer than the 3 inner. *Ovary* 1-chambered, with 3 parietal placentas; style as long as the perianth-tube; stigmas 3, erect; ovules many.

Aquatic herbs, with more or less branched stems, leafy throughout; leaves alternate, subopposite or whorled; spathes axillary, solitary; male spathe ovate, bifid at the apex, many-flowered; female spathe ovate or oblong, 1-flowered.

Species about 15, chiefly in tropical Africa, 1 in the Mascarene Islands, and 1 in India; 2 species recorded from South Africa, extending from the Transvaal, Natal, Orange Free State to the Uitenhage and Knysna districts. (Type: *L. muscoides* Harv.)

95 4. OTTELIA Pers., Syn., vol. 1, p. 400 (1805)

(*Boottia* Wall.)

Flowers bisexual, solitary and sessile in a tubular 2-fid spathe. *Perianth* 3-merous, in 2 series above the beak of the ovary; outer segments oblong or linear, rigidly membranous; inner petaloid, much larger than the outer, broadly obovate or orbicular, with a fleshy appendage at the base. *Stamens* 6 to many; filaments often flattened; anthers erect, oblong or linear. *Ovary* oblong, more or less beaked, with the placentas strongly developed and dividing the ovary into almost 6 perfect chambers; styles 6, linear, semi-2-fid; ovules many. *Fruit* included in the spathe, 3—6-winged, oblong, attenuated at the apex. *Seeds* numerous, small, oblong.

Aquatic herbs with very short stems; leaves crowded, some with short petioles submerged, some with long petioles floating; lamina ovate, oblong, or very broadly cordate; scape elongated; spathe herbaceous, many-nerved, strongly 2—6-ribbed.

Species about 40, natives of tropical Asia, Japan, Australia, the Mascarene Islands, Brazil, and tropical Africa; 3 species in South Africa, recorded from the Transvaal and the Bechuanaland Protectorate. (Type: *O. alismoides* (L.) Pers.)

12. GRAMINEAE

Plants rarely monoecious. *Flowers* bisexual or unisexual. *Perianth* 0 or represented by minute scales (the lodicules). *Stamens* usually 3, rarely 6, 4, 2 or 1; filaments very slender, almost always free; anthers versatile, 2-theous, usually opening by longitudinal slits. *Ovary* superior, 1-chambered, with a solitary ovule, usually glabrous, rarely hairy; styles usually 2, rarely 3 or 1, free or united at the base, usually terminal on the ovary; stigmas as many as the styles, usually plumose, exerted terminally or laterally. *Fruit* a caryopsis, with the pericarp adnate to the seed, rarely the seed free within the pericarp, frequently remaining enclosed within the valve and pale. *Seed* with starchy or chitinous endosperm; embryo usually small; hilum distinct.

Usually annual or perennial herbs, rarely suffrutescent or tall shrubs or trees; stem (*culm*) simple or branched, usually cylindric and hollow and with distinct nodes; in the perennial species the culm arising as an innovation shoot which either pierces the subtending sheath (*extra vaginal*) or grows up inside the sheath (*intra vaginal*); leaves usually 2-ranked and basal, more rarely distantly arranged up the culm, consisting of a blade and usually a split sheath; at the junction of the blade and sheath is usually a ciliate rim or membrane (the *ligule*); the unit of inflorescence (the *spikelet*) consists of a short axis (the *rhachilla*) bearing bracts which are either empty or subtend flowers; the lowermost bracts (*glumes*) invariably 2, empty; the succeeding bract or bracts (*valves*) 1 to many, subtending flowers and usually a bracteole (the *pale*) or empty; the bracteole (the *pale*) on a minute branch of the rhachilla, invariably 2-keeled, sometimes reduced or absent; spikelets rarely solitary, usually massed into various types of inflorescence at the end of the culm, falling with or without the glumes.

Genera 612; species over 3,000, found in all parts of the world.

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|---|---|
| 1. Culm woody (bamboos) | 2 |
| Culm not woody | 3 |
| 2. Culm slender, about 5 mm. in diameter | 160. Arundinaria Michx. |
| Culm robust, about 2 cm. in diameter | 161. Bambusa Schreb. |
| 3. Plants producing bulbils on the inflorescence (viviparous) | 147. Poa Linn. |
| Plants not viviparous | 4 |
| 4. Inflorescence solitary, very rarely several, at the end of each unbranched flowering culm, either a true spike, or very compact so that it appears spike-like; more rarely the spikelet solitary and terminal | 5 |
| Inflorescence variously branched, but never spike-like at the end of the unbranched flowering culm | 99 |
| 5. Spikelet solitary | 153. Brachypodium Beauv. |
| Spikelets massed in an inflorescence | 6 |
| 6. Spikelets enclosed in an involucre covered with stout rigid spines or spikelets bristly with cartilaginous bristles or hairy with bulbous-based hairs or surrounded at the base with an involucre of 1 or more bristles | 7 |
| Spikelets glabrous, hairy, or scabrid, but not as above; rarely with the keel of the glumes muciculate-pectinate | 15 |
| 7. Spikelets hairy with bulbous-based hairs | 8 |
| Spikelets spiny, bristly, or surrounded by an involucre of 1 or more bristles | 11 |
| 8. Spikelets densely villous | 32. Anthephora Schreb. |
| Spikelets not villous | 9 |
| 9. Inflorescence exserted from the uppermost leaf-sheath | 10 |
| Uppermost leaf-blade overtopping the inflorescence | 125. Urochlaena Nees |
| 10. Spikelets strongly compressed, elliptic to ovate in outline; valves 2-ranked | 140. Plagiochloa Adam. & Sprague |
| Spikelets not strongly compressed; valves not 2-ranked | 141. Lasiochloa Kunth |
| 11. Spikelets bristly or enclosed in a spiny involucre | 12 |
| Spikelets with an involucre of 1 or more bristles at the base | 14 |
| 12. Spikelets enclosed in a spiny involucre | 61. Cenchrus Linn. |
| Spikelets covered with cartilaginous bristles | 13 |

13. Lower glume absent or represented by a small scale; upper glume not produced into a long fine acumen **143. *Tragus* Haller**
Both glumes developed and subequal; both produced into a long fine acumen **141. *Lasiochloa* Kunth**
14. Mature spikelets falling without the bristles **59. *Setaria* Beauv.**
Mature spikelets falling with the bristles **62. *Pennisetum* L. Rich.**
15. Valve 2—9-awned or the awn 3-partite 16
Awn, when present, solitary 24
16. Valve 2—3-awned or the awn 3-partite 17
Valve 5—9-awned 22
17. Valve 1... .. 18
Valves 2 or more 20
18. Glumes sometimes shortly awned, never with long capillary or plumose awns **72. *Aristida* Linn.**
Glumes with long capillary awns or awns plumose 19
19. Awns of glumes plumose **81. *Lagurus* Linn.**
Awns of glumes not plumose **77. *Polypogon* Desv.**
20. Valves 2 **95. *Pentaschistis* Stapf**
Valves 3 or more 21
21. Inflorescence not branched (central axis simple) **93. *Danthonia* Lam.**
Inflorescence branched (central axis not simple) **124. *Triraphis* R. Br.**
22. Glumes 1-nerved **95. *Pentaschistis* Stapf**
Glumes distinctly 3—11-nerved 23
23. Valves 7—9-awned; fertile valve 1 **122. *Enneapogon* Desv.**
Valves 5-awned; fertile valves 3—5 **123. *Schmidtia* Steud.**
24. Spikelets distinctly awned or the valves or glumes distinctly mucronate or long and sharply acuminate 25
Spikelets not awned, neither valves nor glumes mucronate or acuminate, rarely with a short awn hidden by the glumes and not readily visible 62
25. Spikelets fascicled, fertile and sterile; rachilla of sterile spikelet very evident to the naked eye, or apparent spikelet really a much abbreviated branch of the central axis bearing 1-flowered spikelets with the lower glume absent and the 2—3 upper spikelets reduced to awns **26**
Spikelets all fertile, more rarely fertile and male; rachilla not evident to the naked eye 27
26. Spikelets 1-flowered; glume awned; valve mucronate **35. *Monelytrum* Hack.**
Spikelets 2—3 flowered; glumes not awned; valves awned **144. *Cynosurus* Linn.**
27. Spikelets in groups of 3; glumes represented by 2 long awns; sometimes the lateral spikelets much reduced so that the central spikelet appears to have 2 awns arising from its peduncle **159. *Hordeum* Linn.**
Spikelets solitary or 2-nate, rarely in clusters of 4—5 28
28. Glumes acuminate, generally 2-partite, not produced into distinct bristle-like awns; valves not awned or rarely pungent-mucronate 29
Awns from the glumes or valves very distinctly bristle-like 34

29. Valves or glumes pungent-mucronate or acuminate ... 30
 Valves or glumes not pungent, if pungent then spikelets in groups of 4—5 ... 33
30. Spikelets 1 cm. or more broad, much compressed
 Spikelets less than 0.5 cm. broad ... **115. Entplocamia** Stapf ... 31
31. Flowers 4—6 ... **127. Elytrophorus** Beauv.
 Flowers 1—4; if 4, then spikelets not arranged in distinct separate groups on the main axis ... 32
32. Inflorescence glabrous; ligule membranous
 Inflorescence hairy; ligule a ciliated rim **116. Dinebra** Jacq.
142. Stiburus Stapf
33. Spikelets 2-nate ... **15. Elyonurus** H. & B.
 Spikelets in clusters of 4—5 ... **32. Anthephora** Schreb.
34. Both glumes passing into capillary awns; inflorescence unbranched ... 35
 Very rarely both glumes with long capillary awns but, if so, then inflorescence branched ... 36
35. Ligule hyaline ... **36. Perotis** Aiton
 Ligule a fringe of dense silky hairs ... **126. Fingerhuthia** Nees
36. Spikelets 2-nate, usually one sessile and the other peduncled; rarely both peduncled ... 37
 Spikelets solitary, sessile or peduncled ... 44
37. Spikelets very unequally peduncled; nodes of culm with a distinct ring of hairs ... **14. Trachypogon** Nees
 One spikelet sessile, the other peduncled; nodes of culm rarely with a distinct ring of hairs ... 38
38. Awn 6 or more times as long as the spikelet ... 39
 Awn less than 6 times as long as the spikelet ... 41
39. Awns erect and twisted together at the top of the inflorescence
 Awns separate, erect-spreading ... **27. Heteropogon** Pers. ... 40
40. Lower glume transversely rugose on the lower half
 Lower glume not transversely rugose **10. Rhytachne** Desv.
9. Urelytrum Hack.
41. Glume of peduncled spikelet almost 3 mm. broad ... 42
 Glume of peduncled spikelet less than 1 mm. broad ... 43
42. Glumes not awned ... **7. Ischaemum** Linn.
 Upper glume awned ... **8. Sehima** Forsk.
43. Peduncle shorter than the glume (excluding the awn)
 Peduncle as long as or slightly longer than the glume (excluding the awn) **17. Andropogon** Linn.
23. Schizachyrium Nees
44. Glume awned from the middle of the back **106. Ctenium** Panz.
 Glume, if awned, not from the middle of the back ... 45
45. Awns several from each spikelet ... 46
 Awns 2—3 from each spikelet, rarely awn solitary ... 53

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|--|---|
| 46. Inflorescence unbranched (i.e. central axis simple) | 47 |
| Inflorescence branched forming a very contracted panicle | 50 |
| 47. Spikelets not 2-ranked on the central axis | 126. <i>Fingerhuthia</i> Nees |
| Spikelets 2-ranked | 48 |
| 48. Spikelets 3—5 mm. long | 111. <i>Tripogon</i> R. & S. |
| Spikelets 1—4 cm. long (excluding the awns) | 49 |
| 49. Both glumes present | 153. <i>Brachypodium</i> Beauv. |
| Lower glume absent in the lateral spikelets; both present in the terminal spikelet | 154. <i>Lolium</i> Linn. |
| 50. Inflorescence finely villous or pilose | 51 |
| Inflorescence scabrid, pubescent, or glabrous | 52 |
| 51. Valves 2-lobed, awned from the sinus | 93. <i>Danthonia</i> Lam. |
| Valves not 2-lobed, awned from the tip | 132. <i>Leptocarydion</i> Hochst. |
| 52. Spikelets fertile and sterile; the fertile spikelets hidden by the persistent sterile spikelets | 144. <i>Cynosurus</i> Linn. |
| Spikelets all fertile | 150. <i>Vulpia</i> Gmelin |
| 53. Awn solitary from each spikelet | 54 |
| Awn 2—3 from each spikelet | 57 |
| 54. Inflorescence unbranched; spikelets distichous | 140. <i>Plagiochloa</i> Adam. & Sprague |
| Inflorescence branched; spikelets not distichous | 55 |
| 55. Glumes slightly saccate near the base | 79. <i>Gastridium</i> Beauv. |
| Glumes not saccate | 56 |
| 56. Valve enveloped in long hairs | 80. <i>Calamagrostis</i> Adans. |
| Valve not enveloped in long hairs | 78. <i>Agrostis</i> Linn. |
| 57. Inflorescence not branched | 58 |
| Inflorescence branched | 60 |
| 58. Ovary hairy above; ligule membranous | 158. <i>Secale</i> Linn. |
| Ovary glabrous; ligule a fringe of hairs or ciliate | 59 |
| 59. Spikelets villous | 126. <i>Fingerhuthia</i> Nees |
| Spikelets glabrous | 107. <i>Enteropogon</i> Nees |
| 60. Spikelets densely villous; hairs hiding the awns | 57. <i>Rhynchelytrum</i> Nees |
| Spikelets not densely villous; awns evident | 61 |
| 61. Awn from the back of the valve | 71. <i>Anthoxanthum</i> Linn. |
| Awn from the sinus of the valve | 93. <i>Danthonia</i> Lam. |
| 62. Keel of glumes muricate-pectinate | 83. <i>Prionanthium</i> Desv. |
| Keel of glumes not muricate-pectinate | 63 |
| 63. Inflorescence branched; branches sometimes hidden by the spikelets, but the glumes broadly winged | 64 |
| Inflorescence not branched; very rarely branched, but then the branches so pressed against the central axis that they are not easily observed | 75 |
| 64. Inflorescence villous or spikelets long ciliate | 65 |
| Inflorescence glabrous or scabrid | 70 |

65. Spikelets generally 2-nate; 1 sessile, the other peduncled
 1. Imperata Cyr.
 Spikelets solitary 66
66. Spikelets sessile **136. Koeleria** Pers.
 Spikelets peduncled 67
67. Leaves arranged along the culm; leaf-blades more or less awl-shaped
 130. Diplachne Beauv.
 Leaves all basal; leaf-blades long, terete 68
68. Glumes glabrous; nerves distinct **146. Schismus** Beauv.
 Glumes hairy; nerves not visible 69
69. Culm hairy just below the inflorescence; inflorescence with white and
 pink hairs **57. Rhynchelytrum** Nees
 Culm glabrous below the inflorescence; spikelets dark-coloured,
 sparsely villous with white hairs **142. Stiburus** Stapf
70. Ligule membranous, evident 71
 Ligule a fringe of hairs 73
71. Glumes winged, with evident marginal nerves; the two lowest valves
 empty, much reduced or suppressed; the uppermost valve with a
 bisexual flower **70. Phalaris** Linn.
 Glumes not winged; marginal nerves obscure; flowers 1—4, if more than
 1, then the lower valves subtending the bisexual flowers 72
72. Spikelets 2—4-flowered **136. Koeleria** Pers.
 Spikelets 1-flowered **78. Agrostis** Linn.
73. Spikelets arranged distichously, compressed, ovate or elliptic in outline,
 4—9-flowered **140. Plagiochloa** Adam. & Sprague
 Spikelets not arranged distichously, or compressed or ovate, 1—
 2-flowered 74
74. Spikelets 2-flowered, tinged with purple or peduncle arising from a
 swelling on the central axis or its branches, or central axis with
 scattered glands **95. Pentaschistis** Stapf
 Spikelets 1-flowered, a uniform olive-green in colour; central axis with-
 out swelling or glands **76. Sporobolus** R. Br.
75. Spikelets solitary, distinctly distichous 76
 Spikelets generally solitary, not distichous, very rarely 2-nate and
 distichous 81
76. Glumes facing or with their backs turned towards the hollow surface of
 the central axis 77
 Glumes with their sides turned towards the hollow surface of the central
 axis 80
77. Both glumes present **140. Plagiochloa** Adam. & Sprague
 Lower glume of the lateral spikelet absent 78
78. Spikelet 1-flowered 79
 Spikelet 4 to many-flowered **154. Lolium** Linn.
79. Inflorescence flattened **155. Lepturella** Stapf
 Inflorescence cylindric **156. Lepturus** R. Br.
80. Spikelets scabrous **158. Secale** Linn.
 Spikelets not scabrous **157. Agropyron** Gaertn.

98. Valve 1 **100. Microchloa** R. Br.
Valves 2 **101. Rendlia** Chiov.
99. Spikelets awned or mucronate or subtended by 1 or more bristles ... 100
Spikelets not evidently awned or mucronate 225
100. Spikelets or at least some of them subtended by 1 or more bristles ... 101
Spikelets not subtended by bristles 103
101. Leaf-blade sagittate at the base and situated on a pseudo-petiole
60. Cymbosetaria Schwkt.
Leaf-blade not as above 102
102. Spikelet falling with the bristles ... **63. Beckeropsis** Fig. et de Not.
Spikelet falling without the bristles ... **59. Setaria** Beauv.
103. Leaf-blade broadly ovate or ovate-lanceolate, arising alternately on the
culm 104
Leaf-blade sometimes lanceolate, but mostly basal 105
104. Leaf-blade amplexicaul; spikelets 2-nate, 1 sessile, the other peduncled
16. Arthraxon Beauv.
Leaf-blade not amplexicaul; spikelets solitary
65. Olyra Linn.
105. Valves manifestly transversely rugose or strongly compressed and
minutely punctate, or spikelets with bulbous-based hairs or keel of
glume tuberculed 106
Spikelets glabrous or hairy but not with bulbous-based hairs; valves not
transversely rugose, at least not evident to the naked eye; keel of
glume not tuberculed 113
106. Valves transversely rugose or strongly compressed and minutely
punctate, or keel of glumes tuberculed 107
Spikelets hairy with bulbous-based hairs 109
107. Valves transversely rugose or minutely punctate 108
Keel of glume tuberculed **95. Pentaschistis** Stapf
108. Valves transversely rugose **69. Ehrharta** Thunb.
Valves much compressed and minutely punctate
67. Oryza Linn.
109. Group of spikelets subtended by a green spathe
31. Themeda Forsk.
Spikelets not subtended by a green spathe 110
110. Spikelets 1—2-awned... .. 111
Apparent spikelet (really 3-spikelets) 3-awned
90. Tristachya Nees
111. Spikelet (the upper valve) 1-awned 112
Spikelet (the upper glume and lower valve) 2-awned
57. Rhynchelytrum Nees
112. Upper valve densely bearded on each side of the margin, 2-lobed, with
each lobe usually tapering into a fine bristle
91. Trichopteryx Nees
Upper valve not bearded, 2-lobed, with the lobes acute or obtuse
92. Loudetia Hochst.
113. Spikelets in groups of 3's 114
Spikelets not in groups of 3's, very rarely 3-nate, but then the sessile
spikelet bisexual and the 2 peduncled spikelets male or barren ... 115

114. Spikelets all alike **90. *Tristachya* Nees**
 Sessile spikelet bisexual; peduncled spikelet male or barren
20. *Chrysopogon* Trin.
115. Valves 3—9-awned or awn 3-partite... .. 116
 Awn or mucro solitary from each glume or valve, or valve with a long
 acumen, or glumes distinctly mucronate, or spikelets subtended by
 1 or more bristles 124
116. Valve 3-awned or awn 3-partite 117
 Valve 5—9-awned 123
117. Awn 3-partite; spikelet 1-flowered ... **72. *Aristida* Linn.**
 Valve 3-awned; spikelet 2—18-flowered 118
118. Main awn as long as or shorter than the valve
124. *Triraphis* R. Br.
 Main awn longer than the valve, usually twice as long 119
119. Main awn from the back of the valve; ovary pilose or villous
89. *Helicotrichum* Bess.
 Main awn from the tip or sinus of the valve; ovary usually glabrous,
 more rarely with a tuft of branched hairs at the top 120
120. Spikelet 2-flowered 121
 Spikelet 3- or more flowered 122
121. Ovary glabrous **95. *Pentaschistis* Stapf**
 Ovary with a tuft of branched hairs on the top
96. *Pentameris* Beauv.
122. Peduncle articulated about the middle or above the middle, hairy at the
 articulation; the upper portion falling with the spikelet; lowermost
 valve usually without side awns ... **94. *Chaetobromus* Nees**
 Peduncle not articulated; lowermost valve with side awns
93. *Danthonia* Lam.
123. Valve 9-awned; spikelet with one fertile flower
122. *Enneapogon* Desv.
 Valve 5-awned; spikelet with 3—5 fertile flowers
123. *Schmidtia* Steud.
124. Spikelets fascicled, fertile and sterile, with the internodes of the rhachilla
 of the sterile spikelets very evident to the naked eye and covered with
 empty valves **144. *Cynosurus* Linn.**
 Spikelets solitary or 2-nate or clustered, or very rarely 3-nate; sometimes
 the peduncled spikelet represented by the peduncle only; rhachilla
 very rarely evident to the naked eye, but the spikelets peduncled and
 not fascicled 125
125. Peduncles long, filiform, arranged in whorls on the central axis and
 bearing 3 spikelets (2 peduncled and 1 sessile)
20. *Chrysopogon* Trin.
 Spikelets solitary or 2-nate, if 3-nate then spikelets all alike in sex; more
 rarely spikelets grouped to somewhat resemble a single spikelet ... 126
126. Whole inflorescence arranged digitately or subdigitately at the end of the
 culm; the branches usually spikelike but not subtended by a spathe ... 127
 Inflorescence a panicle or raceme or with spike-like branches arranged on
 the main axis or branches of the main axis (but not digitate), if
 digitate then the spike-like branches subtended by a green or reddish
 spathe and sometimes far exserted from the spathe 145

127. Spikelets 2—3-nate 128
 Spikelets solitary 138
128. Spikelets all peduncled; peduncles more or less equal or unequal ... 129
 Spikelets 1 sessile (more rarely subsessile); the other peduncled ... 131
129. Awn about 5—8 times as long as the spikelet, hairy or scabrid ... 130
 Awn shorter than the spikelet, glabrous **44. Alloteropsis Presl**
130. Subsessile spikelet awnless **14. Trachypogon Nees**
 Both spikelets awned **54. Stereochaena Hack.**
131. Internodes of rhachis more or less cup-shaped at the top; tip of peduncle slightly produced on the inner face of the spikelet
17. Andropogon Linn.
 Internodes of rhachis not cup-shaped at the top; peduncle not produced at the apex 132
132. Both spikelets awned 133
 One spikelet awned 135
133. Sessile spikelet falling with the peduncle of the peduncled spikelet and adjoining the internode of the rhachis **7. Ischaemum Linn.**
 Spikelets not falling as above 134
134. Leaves mostly or all basal **4. Eulalia Kunth**
 Leaves lanceolate and arranged up the culm, distant from one another **5. Leptatherum Nees**
135. Peduncled spikelet awned; sessile spikelet awnless
9. Urelytrum Hack.
 Sessile spikelet awned; peduncled spikelet awnless 136
136. Peduncle concave-spathulate, bearing a single linear-lanceolate bract at the apex **7. Ischaemum Linn.**
 Peduncle linear, bearing a distinctly nerved glume or glumes ... 137
137. Peduncle more than half the length of the sessile spikelet; peduncled spikelet lanceolate, acute, glabrous or almost so; glume of sessile spikelet often with an evident pit ... **21. Bothriochloa O. Kuntze**
 Peduncle less than half the length of the sessile spikelet; peduncled spikelet elliptic-oblong, sparsely covered with long hairs; glume of sessile spikelet without a pit ... **22. Dichanthium Willemet**
138. Main axis very evidently produced above the uppermost spikelets
119. Dactyloctenium Willd.
 Uppermost spikelets sometimes reduced, but the main axis not or only minutely produced beyond them 139
139. Spikelets arranged unilaterally on the rhachis 140
 Spikelets not arranged unilaterally on the main axis 144
140. Uppermost glume with a prominent midrib which is produced into a distinct awn below the apex ... **109. Eustachys Desv.**
 Upper glume not as above 141
141. Valves glabrous **118. Acrachne W. & A.**
 Valves hirsute or hairy on the back 142
142. Valves 4—10, hirsute on the back ... **113. Lintonia Stapf**
 Valves usually 2, ciliate on the back 143

143. Upper glume 2-lobed, mucronate from the sinus or the keel passing into a short acumen 108. *Chloris* Sw.
Upper glume without a mucro or acumen 112. *Tetrapogon* Desf.
144. Glumes ovate, prominently nerved; awn stout, shorter than the spikelet 44. *Alloteropsis* Presl
Glumes linear, not prominently nerved; awn capillary, longer than the spikelet 121. *Lophachme* Stapf
145. Groups of spikelets or the digitately arranged spike-like branches of the inflorescence subtended by a spathe; the whole forming a spatheate panicle; sometimes spathe remote from the inflorescence 146
Inflorescence not subtended by a spathe 152
146. Awn distinctly hairy 147
Awn glabrous or almost so, sometimes scaberulous 148
147. Spikelets in spikelike racemes; racemes usually in pairs and each pair supported by a spathe 25. *Hyparrhenia* Anderss.
Spikelets appearing as if fascicled; apparent spikelet really consisting of 1 fertile sessile spikelet with 2 peduncled spikelets at the base and surrounded by a false involucre of 4 sessile spikelets; the whole enclosed in a green spathe... .. 31. *Themeda* Forsk.
148. Sessile spikelet with 2 awns 26. *Monocymbium* Stapf
Sessile spikelet with a solitary awn 149
149. Peduncled spikelet represented by a peduncle only or by the peduncle with a linear scale at the apex 17. *Andropogon* Linn.
Peduncled spikelet with well-developed glumes 150
150. Inflorescence supported by a spathe... .. 151
Inflorescence not supported by a spathe 21. *Bothriochloa* O. Kuntze
151. Upper valve of sessile spikelet awned 24. *Cymbopogon* Spreng.
Upper glume awned 6. *Diectomis* Kunth.
152. Inflorescence spike-like, solitary, and terminal on the branches of the culm; the whole forming a loose panicle 23. *Schizachyrium* Nees
Inflorescence an evident panicle or raceme or composed of spikes or spike-like racemes arranged up a central axis or branches of the central axis 153
153. Inflorescence of spikes or spike-like racemes arranged up a central axis or branches of a central axis 154
Inflorescence an evident panicle or raceme, loose or compact, more rarely a spike 166
154. Spikelets or groups of spikelets very remote on the main axis; leaves short, lanceolate, arranged distantly up the culm 58. *Oplismenus* P. Beauv.
Spikelets not as above; leaves mostly basal 155
155. Spikelets crowded on a very short flattened main axis; the groups of spikelets very closely packed and resemble at first sight a single spikelet 116. *Dinebra* Jacq.
Spikelets not crowded on a very short rhachis 156
156. Awn or mucro solitary in each spikelet, sometimes more or less hidden by long villous hairs 157
Awns or mucros 2 to several in each spikelet 162

157. Rhachis much flattened **41. Eriochloa** H. B. & K. 158
Rhachis not much flattened 160
158. Spikelets glabrous 159
Spikelets hispid or pubescent or villous 160
159. Lower glume spiny on the back ... **19. Vetiveria** Thouars
Lower glume not spiny on the back ... **37. Arundinella** Raddi
160. Spikelet hispid or pubescent **47. Echinochloa** Beauv.
Spikelets, or at least the valve and pale, villous 161
161. Valves 2; lower crustaceous **46. Brachiaria** Griseb.
Valve 1, hyaline **110. Willkommia** Hack.
162. Spikelets peduncled 163
Spikelets sessile 164
163. Ligule membranous, not ciliate ... **133. Trichoneura** Anderss.
Ligule a fringe of hairs **130. Diplachne** Beauv.
164. Ligule membranous, not ciliate ... **143. Dactylis** Linn.
Ligule ciliate 165
165. Small plants up to 15 cm. high; leaf-blades almost filiform
111. Tripogon R. & S.
Robust plants over 30 cm. high; leaf-blades flat
115. Entoplocamia Stapf
166. Apparent spikelet really a group of 3 spikelets at the end of a long
peduncle **90. Tristachya** Nees
Spikelets distinct, more rarely clustered on short peduncles, but then the
clusters remote on the main axis 167
167. Leaves distant on the culm; blades lanceolate or long-linear; spikelets
remote on the main axis, or inflorescence a very large dense panicle ... 168
Leaves mostly basal; blades not distinctly lanceolate; spikelets not
remote on the main axis 170
168. Spikelets remote on the main axis ... **58. Oplismenus** P. Beauv.
Inflorescence a large dense panicle 169
169. Lowest valve like the others, subtending a bisexual flower
128. Arundo Linn.
Lowest valve empty or subtending a male flower
129. Phragmites Trin.
170. Inflorescence a false spike **153. Brachypodium** Beauv.
Inflorescence a panicle or raceme 171
171. Awns or mucros 2 or more from each spikelet, sometimes only 1 awn
projecting beyond the glumes 172
Awn or mucro solitary in each spikelet 202
172. Spikelets apparently 3-nate but really 3 long-linear awnless sterile
spikelets which surround fertile awned spikelets
145. Lamarckia Moench.
Spikelets solitary, very rarely (in *Ehrharta*) 2-nate 173
173. Ligule ciliate or reduced to a fringe of hairs 174
Ligule membranous, not ciliate 187

- | | |
|---|--------------------------------|
| 174. Peduncle articulated below the spikelet, usually bearded and plumose or long villous at the articulation or at the base of the spikelet; spikelets falling entire | 175 |
| Peduncle not articulated below the spikelet; glumes persistent | 177 |
| 175. Spikelet with 2 valves but only 1 fertile flower | 176 |
| Spikelet with 3—4 valves and more than 1 fertile flower | |
| 94. Chaetobromus Nees | |
| 176. Spikelets usually villous with silky hairs | 57. Rhynchelytrum Nees |
| Spikelets pilose | 38. Melinis Beauv. |
| 177. Awn from the back of the valve | 178 |
| Awn from the tip or sinus of the valve | 179 |
| 178. Glumes pubescent, 3-nerved | 87. Trisetum Pers. |
| Glumes glabrous, 1-nerved | 130. Diplachne Beauv. |
| 179. Lower valve (or 2 lower valves when 3 valves present) empty and different from the upper or uppermost valve | 180 |
| Valves all similar | 181 |
| 180. Valves 3; glumes more or less equal | 69. Ehrharta Thunb. |
| Valves 2; lower glume very much smaller than the upper glume | |
| 57. Rhynchelytrum Nees | |
| 181. Valves not toothed or lobed | 115. Entplocamia Stapf |
| Valves toothed or lobed | 182 |
| 182. Ovary hairy | 96. Pentameris Beauv. |
| Ovary glabrous | 183 |
| 183. Glumes pubescent | 87. Trisetum Pers. |
| Glumes glabrous | 184 |
| 184. Ligule membranous or reduced to a rim | 130. Diplachne Beauv. |
| Ligule a fringe or cilia | 185 |
| 185. Valves normally 2 | 95. Pentaschistis Stapf |
| Valves more than 2 | 186 |
| 186. Valves 2-lobed, awned from the sinus or awn reduced to a mucro | 93. Danthonia Lam. |
| Valves unequally lobed, awned from the tip | 99. Crinipes Hochst. |
| 187. Glumes, at least the upper, as long as or longer than the valves | 188 |
| Glumes much shorter than the valves | 196 |
| 188. Glumes very distinctly many-nerved or with very prominent keels and side nerves | 189 |
| Glumes not distinctly many-nerved | 191 |
| 189. Spikelets long-peduncled, nodding | 88. Avena Linn. |
| Spikelets shortly peduncled, not nodding | 190 |
| 190. Valves 3; the 2 lower usually barren; the uppermost subtending a fertile flower | 71. Anthoxanthum Linn. |
| Valves 2; the lower subtending a fertile flower; the upper barren or with a male flower | 82. Holcus Linn. |
| 191. Two or more fertile flowers in each spikelet | 192 |
| One fertile flower in each spikelet | 194 |

192. A delicate annual; leaf-blade smooth ... **84. Aira** Linn.
Perennials about 0.6 m. high 193
193. Primary branches of the inflorescence distinctly whorled on the central axis **86. Deschampsia** Beauv.
Primary branches of the inflorescence usually arising singly on the central axis **130. Diplachne** Beauv.
194. Both glumes with long capillary awns ... **77. Polypogon** Desv.
Both glumes not awned or, if awned, then the awns not capillary... .. 195
195. Spikelet, at least the valves, villous ... **69. Ehrharta** Thunb.
Spikelet glabrous or almost so ... **78. Agrostis** Linn.
196. Valves distinctly 2-lobed, with bristles from the lobes
... .. **89. Helictotrichon** Bess.
Valves very rarely distinctly 2-lobed but, if so, then the lobes without bristles 197
197. Valves villous or scabrid **69. Ehrharta** Thunb.
Spikelets glabrous, rarely the whole spikelet shortly and softly villous or the valves minutely pubescent 198
198. Awns longer than the valves 199
Awns shorter than the valves or valves mucronate 201
199. Valve passing directly into the awn ... **150. Vulpia** Gmelin
Valve 2-lobed, with the awn from the sinus or from the back of the valve 200
200. Ovary glabrous **98. Streblochaete** Hochst.
Ovary villous on top **152. Bromus** Linn.
201. Ovary glabrous; styles inserted on top of the ovary
... .. **149. Festuca** Linn.
Ovary villous on top; styles inserted on one side of the ovary
... .. **152. Bromus** Linn.
202. Spikelets 2-nate 203
Spikelets solitary 206
203. Glumes persistent **97. Danthoniopsis** Stapf
Glumes deciduous, falling with the spikelet 204
204. Spikelets both alike, unequally peduncled ... **3. Miscanthidium** Stapf
Spikelets different; one sessile, the other peduncled or one spikelet represented by a peduncle only 205
205. Peduncle bearing a spikelet which is barren or which contains a male flower **18. Sorghum** Pers.
Peduncle naked **29. Sorghastrum** Nash
206. Ligule ciliate or a fringe of hairs 207
Ligule membranous or scarious 216
207. Upper glume awned; awn 3—4 times as long as the glume
... .. **53. Oryzidium** Hubb. & Schwk.
Valves awned; if glumes awned, then one shorter than the body of the glume or awn from valves 3-partite 208
208. Leaf-sheath tuberculed 209
Leaf-sheath not tuberculed 211

209. Lower glume very minute; upper glume not scabrid 210
Both glumes well developed and scabrid, at least the lower
37. *Arundinella* Raddi
210. Spikelets densely villous 57. *Rhynchelytrum* Nees
Spikelets not densely villous 38. *Melinis* Beauv.
211. Valve 1 72. *Aristida* Linn.
Valves 2 or more 212
212. Valves 5—6 134. *Odyssea* Stapf
Valves 2 213
213. Valves subtending the fertile flower somewhat crustaceous and of a
different texture to the lower valve 57. *Rhynchelytrum* Nees
Both valves more or less the same texture 214
214. Spikelets scabrid 37. *Arundinella* Raddi
Spikelets not scabrid 215
215. Upper valve densely bearded on each side near the margin, 2-lobed, with
each lobe usually tapering into a fine bristle 91. *Trichopteryx* Nees
Upper valve not bearded, 2-lobed, with the lobes acute or obtuse
92. *Loudetia* Hochst.
216. Valve 1 217
Valves 2 or 3 221
217. Valve with long fine hairs from the base; hairs sometimes longer than the
valve 80. *Calamagrostis* Adams.
Valve, if hairy, not with long fine hairs from the base 218
218. Valve exserted from the glumes 75. *Pseudobromus* K. Schum.
Valve as long as or shorter than the glumes 219
219. Awn about as long as or shorter than the spikelet
78. *Agrostis* Linn.
Awn 2—3 times as long as the spikelet 220
220. Awn jointed on to the valve and easily separated
74. *Oryzopsis* Michx.
Awn persistent 73. *Stipa* Linn.
221. Leaf-sheath tuberculed 30. *Cleistachne* Benth.
Leaf-sheath not tuberculed 222
222. Valves 3; the uppermost subtending a bisexual flower
71. *Anthoxanthum* Linn.
Valves 2; very rarely 3, but, if so, then the uppermost empty or subtend-
ing a male flower 223
223. Valves 2, very unequal 82. *Holcus* Linn.
Valves 2, rarely 3, similar 224
224. Glumes almost hyaline, without a prominent keel
84. *Aira* Linn.
Glumes membranous, with a distinct keel 86. *Deschampsia* Beauv.
225. Inflorescence digitate or subdigitate or of spikes or spike-like racemes or
panicles arranged on a central axis 226
Inflorescence an evident panicle or raceme, if a number of racemes from
a central axis, then the racemes more or less lax and not spike-like ... 260

226. Inflorescence digitate or subdigitate ... 227
 Inflorescence of spikes or spike-like racemes or panicles arranged on a central axis ... 235
227. Spikelets 2-nate ... 228
 Spikelets solitary ... 230
228. Nerves of lower glume tuberculed ... **7. Ischaemum** Linn. ... 229
 Nerves of lower glume not tuberculed ...
229. Inflorescence subtended by a spathe... **17. Andropogon** Linn.
 Inflorescence not subtended by a spathe **49. Digitaria** Heister
230. Ligule not ciliate; lower glume minute or suppressed ... 231
 Ligule ciliate or scarious; lower glume evident ... 232
231. Visible nerves of spikelet parallel ... **49. Digitaria** Heister
 Visible nerves of spikelet curved ... **39. Paspalum** Linn.
232. Flower 1 ... 233
 Flowers 3—6 ... 234
233. A fine creeping grass; valve 3-nerved **103. Cynodon** Rich.
 Coarse maritime grasses; valve 1-nerved **104. Spartina** Schreb.
234. Valves not awned or mucronate ... **117. Eleusine** Gaertn.
 Valves shortly awned or distinctly mucronate **113. Lintonia** Stapf
235. Valve subtending the fertile flower crustaceous, rounded at the apex, very abruptly produced into a short mucro ... 236
 Valve subtending the fertile flower, if crustaceous, sometimes very acute or shortly acuminate but not abruptly produced into a short mucro... 237
236. Lower glume reduced to an annular swelling at the base of the spikelet
 ... **41. Eriochloa** H. B. & K.
 Lower glume much smaller or subequalling the upper, but not reduced to an annular swelling ... **45. Urochloa** Beauv.
237. Glumes with bulbous-based hairs ... 238
 Spikelets glabrous or hairy but not with bulbous-based hairs, sometimes bristly with tubercule-based bristles ... 239
238. Glumes unequal and dissimilar; lower valve similar to the upper glume **46. Brachiaria** Griseb.
 Glumes equal and similar; lower valve unlike the upper glume **141. Lasiochloa** Kunth
239. Rhachilla evident at the base of the spikelet as a very short stalk which articulates with the peduncle ... **51. Leucophrys** Rendle
 Rhachilla not evident at the base of the spikelet ... 240
240. Spikelets 2-nate or clustered, very rarely 3-nate ... 241
 Spikelets solitary ... 246
241. One spikelet sessile, the other peduncled ... 242
 All the spikelets peduncled; peduncles often very unequal or spikelets subsessile or more or less clustered; ligule rarely ciliate, but, if so, then one valve crustaceous ... 243
242. Whole inflorescence densely rufous villous **2. Eriochrysis** Beauv.
 Inflorescence glabrous ... **28. Hypogynium** Nees

243. Spikelets subsessile, clustered, crowded on the rachis
 47. *Echinochloa* Beauv.
 Spikelets peduncled, rarely 1 subsessile, 2-nate, very rarely 3-nate ... 244
244. Visible nerves of spikelet (lower valve) curved 245
 Visible nerves of spikelet (lower valve) parallel
 49. *Digitaria* Heister
245. Glumes subequal 46. *Brachiaria* Griseb.
 Lower glume much smaller than the upper or obsolete
 39. *Paspalum* Linn.
246. Ligule not ciliate 247
 Ligule ciliate, sometimes almost obsolete 252
247. Glumes rigidly ciliate 68. *Leersia* Sw.
 Glumes ciliate with soft white hairs or not ciliate 248
248. Glumes as long as the valves 249
 Valves exerted from the glumes 250
249. Valves ciliate with long white hairs ... 133. *Trichoneura* Anderss.
 Valves not ciliate with long white hairs 70. *Phalaris* Linn.
250. Both glumes or one glume about half the length of the spikelet
 147. *Poa* Linn.
 Spikelet at least 3—9 times as long as the glumes 251
251. Glumes at least one-ninth the length of the spikelet
 151. *Scleropoa* Griseb.
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 130. *Diplachne* Beauv.
252. Spikelets glabrous 253
 Spikelets hairy 256
253. Valve subtending the fertile flower crustaceous
 46. *Brachiaria* Griseb.
 Valve subtending the fertile flower not crustaceous 254
254. Spikelet 1-flowered 76. *Sporobolus* R. Br.
 Spikelet more than 1-flowered 255
255. Rachis manifestly flattened ... 114. *Tetrachne* Nees
 Rachis not or scarcely flattened ... 131. *Pogonarthria* Stapf
256. Valves membranous 257
 Upper valve crustaceous 259
257. A creeping plant; leaves closely arranged on the culm, blade slightly
 longer than the sheath, pungent ... 134. *Odyssea* Stapf
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258. Valves shortly 2-lobed, with a short awn from the sinus
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259. Crustaceous valve smooth and polished 47. *Echinochloa* Beauv.
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260. Upper glume with translucent patches, often covered with hooked spines
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261. Keel of glume tuberculed **95. Pentaschistis** Stapf
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262. Valves conspicuously transversely rugose or tuberculed or minutely punctate 263
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263. Valves conspicuously transversely rugose or tuberculed
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67. Oryza Linn.
264. Spikelets (valve and pale) rigidly ciliate **68. Leersia** Sw.
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267. Ligule not ciliate, rarely fimbriate; one or both glumes always evident ... 268
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139. Briza Linn.
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270. Uppermost valves embracing each other and forming a distinct club-shaped or ellipsoid body **137. Melica** Linn.
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271. Spikelets 1-flowered **80. Calamagrostis** Adans.
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272. Fertile flower 1; valves dissimilar **69. Ehrharta** Thunb.
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273. Valve and pale enclosing the fertile flower crustaceous
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277. Spikelets more or less nodding on capillary peduncles, almost truncate at the base; valves more or less papery **139. Briza** Linn.
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279. Spikelet 1 cm. or more long 280
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280. Spikelet linear; glumes about one-third the length of the spikelet
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281. Valves distinctly several-veined; ovary villous; styles inserted below the
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 shortly pilose; styles inserted on top of the ovary (terminal)
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 of long woolly hairs at the base **147. Poa** Linn.
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284. Primary branches of inflorescence solitary on the central axis, branched
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288. Lower glume 1-nerved 289
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 longer than the sheath, pungent **134. Odyssea** Stapf
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130. Diplachne Beauv.
291. Valves 3 **69. Ehrharta** Thunb.
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292. Lower glume well developed and evident 293
 Lower glume reduced to a small scale or obsolete 294
293. Racemes in spike-like groups arranged along the culm and distinctly
 separate from one another; if in a loose panicle then the spikelets
 acuminate **51. Leucophrys** Rendle
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50. Megaloprotachne Hubb.

294. Upper glume and lower valve gibbous at or below the middle; glumes almost hidden by long hairs ... 57. *Rhynchelytrum* Nees
Upper glume and lower valve not gibbous; spikelet glabrous or hairy but not hidden by long hairs ... 56. *Tricholaena* Schrad.
295. Spikelet much compressed, ovate in outline, about 5 mm. broad 140. *Plagiochloa* Adam. & Sprague
Spikelet not ovate in outline, much less than 5 mm. broad; if almost 5 mm. broad, then the glumes not half the length of the spikelet ... 296
296. Lower valve crustaceous ... 297
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297. Glumes and valves with flattened tips 55. *Acroceras* Stapf
Glumes and valves not with flattened tips ... 298
298. Lower glume much reduced and forming an annular swelling at the base of the spikelet ... 41. *Eriochloa* H. B. & K.
Lower glume sometimes reduced but not forming an annular swelling at the base of the spikelet ... 299
299. Lower glume reduced to a minute scale; tip of upper glume and lower valve minutely notched or bilobed 56. *Tricholaena* Schrad.
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300. Valves with prominently raised, almost winged, ribs; both glumes almost obsolete ... 66. *Potamophila* R. Br.
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302. Valve 1 ... 303
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303. Glumes equal or subequal; valve shorter than the glumes 85. *Poagrostis* Stapf
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304. Valves 2 ... 305
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305. Valves exceeding the glumes ... 135. *Eragrostis* Host.
Valves equalling or shorter than the glumes 95. *Pentstachistos* Stapf
306. Lower glume 1-nerved ... 307
Lower glume 1—7-nerved ... 146. *Schismus* Beauv.
307. Ligule a fringe of hairs, very rarely membranous 135. *Eragrostis* Host.
Ligule reduced to a rim, sometimes very minutely ciliate 130. *Diplachne* Beauv.

109 1. IMPERATA Cyr., Pl. Rar. Ic., vol. 2, p. 26, pl. 11 (1792)

Spikelets all alike, generally 2-nate and unequally peduncled, disarticulating from the peduncles. *Flower* usually solitary, sometimes a lower male flower present. *Glumes* subequal, membranous, 3—9-nerved, rarely nerveless,

enveloped by very long silky hairs from their bases and from the obscure callus. *Valves* 2, generally much smaller than the glumes, hyaline, awnless; upper smaller than the lower, subtending the bisexual flower; lower empty, rarely subtending a male flower. *Pale* hyaline, broad, nerveless. *Lodicules* 0. *Stamens* 1—2. *Styles* connate below; stigmas linear, exserted from the top of the spikelet. *Grain* oblong in outline; embryo $\frac{1}{2}$ the length of the grain or more.

Perennials; basal leaves crowded and, like those of the innovation shoots, long; inflorescence a spike-like or narrowly thyriform silvery-silky panicle, with the branches continuous and bearing the peduncled spikelets.

Species 6—8, natives of the warm regions of both hemispheres; 2 species in South Africa, recorded from South West Africa, through the coastal area to Natal; also recorded from Bechuanaland, the Transvaal, Swaziland, and Basutoland. (Type: *I. cylindrica* (L.) Beauv.)

111 2. ERIOCHRYSIS Beauv., Ess. Agrost., p. 8, pl. 4, f. 11 (1812)
(*Saccharum* L. of the Fl. Cap.)

Spikelets 2-nate, one peduncled, the other sessile, surrounded by short or moderately long hairs springing from the callus. *Sessile spikelet* deciduous with the adjoining internode of the rachis and the peduncle. *Flower* 1. *Glumes* more or less unequal; lower chartaceous or coriaceous, with narrow inflexed margins; with 3 to several intercarinal nerves and usually a few oblique transverse veins; upper thinner 1—3 nerved. *Valves* 2, hyaline, muticous, nerveless; upper subtending the flower and smaller than the barren lower. *Pales* 0. *Lodicules* 2, cuneate. *Stamens* 3. *Stigmas* laterally exserted. *Grain* obovoid to globose; embryo $\frac{1}{2}$ the length of the grain. *Peduncled* spikelet similar to the sessile, but the flower female with rudimentary stamens, falling entire from its peduncle.

Perennials; culms usually hairy at the nodes; leaf-sheath strongly ribbed, more or less villous, especially on the upper portion; blade linear, acute, with a prominent midrib and obscure lateral veins, sparsely villous; ligule long-ciliate; inflorescence a contracted fulvously or rufously hairy panicle; branches spike-like, with a readily disarticulating rachis.

Species 5, natives of Africa and America; 2 species in South Africa, found in the Transvaal, Swaziland, Zululand, and Natal. (Type: *E. caryanensis* Beauv.)

112 3. MISCANTHIDIUM Stapf, Fl. Trop. Afr., vol. 9, p. 89 (1917)
(*Erianthus* Michx.)

Spikelets all alike, 2-nate, unequally peduncled, very rarely 1 sessile, usually villous and with an involucre of hairs at the base, falling entire from the peduncles. *Flower* 1. *Glumes* equal, chartaceous to coriaceous; lower dorsally flattened, more or less 2-keeled, with inflexed margins and a variable number of intracarinal nerves; upper 1—3-nerved, keeled. *Valves* 2, hyaline; lower empty, muticous or mucronate; upper subtending the flower, awned. *Pale* small, hyaline, nerveless. *Lodicules* 2 cuneate. *Stamens* 3. *Stigmas* usually laterally exserted. *Grain* oblong to linear-oblong in outline; embryo $\frac{1}{2}$ the length of the grain.

Perennials, often up to 6 ft. high; culm smooth, glabrous or hairy at the nodes; leaf-sheath ribbed, glabrous; blade flat or convolute, sometimes terete, with a broad and prominent midrib and distinct lateral veins, glabrous or sometimes hairy at the junction with the sheath; ligule membranous; inflorescence a much-branched panicle, often large, silky; branches with a tough or very tardily or readily disarticulating rachis.

An African genus of 4 species; 4 species in South Africa, found in the Transvaal, Zululand, Natal, Basutoland, through the coastal area to the Swellendam district; also found in some of the north-western districts of the Cape Province. (Type: *M. teretifolium* Stapf)

113 4. **EULALIA** Kunth, Rev. Gram., vol. 1, p. 160 (1829)

(*Pollinia* Trin. sect. *Eulalia* of Fl. Cap.)

Spikelets alike or nearly so, one peduncled, the other sessile, hairy or glabrous. *Flowers* 1—2; when 2 the lower male and the upper bisexual. *Glumes* equal; lower membranous, muticous, often truncate, dorsally flattened or concave or longitudinally grooved, more or less 2-keeled, with inflexed margins; upper often narrower, keeled, acute, sometimes with a fine straight mucro. *Valves* usually 2; lower hyaline, muticous, sometimes reduced or quite suppressed, barren or subtending a male flower; upper hyaline, 2-lobed, with a fine or rather stout or more or less kneed awn from the sinus, subtending a bisexual flower. *Pale* small, hyaline, or 0. *Stamens* 3. *Styles* distinct; stigmas plumose. *Grain* oblong in outline; hilum punctiform; embryo rather large.

Annuals or perennials; culm faintly ribbed, hairy below the nodes; leaf-sheath ribbed, tubercled, hairy; blade with a thin midrib and obscure lateral veins, villous; internodes of rhachis similar to the peduncles, articulated below the spikelets; inflorescence a terminal panicle; branches spike-like, simple, fascicled or digitately arranged, with a readily disarticulating rhachis.

Species about 25, natives of the tropical and subtropical regions of the Old World; 1 species in South Africa, found in the Transvaal, Zululand, Natal, and through the coastal area to the Swellendam district. (Type: *E. aurea* Kunth)

113a 5. **LEPTATHERUM** Nees, in Proc. Linn. Soc., vol. 1, p. 92 (1841)

(*Microstegium* Nees; *Pollinia* sect. *Leptatherum* of Fl. Cap.)

Spikelets 2-nate, one sessile, the other peduncled, similar, falling entire; peduncle linear, glabrous. *Flower* 1. *Glumes* equal, similar; lower lanceolate, shortly 2-lobed, concave on the back, with inturned margins, 5-nerved, with a tuft of hairs at the base, ciliate, membranous; upper lanceolate, subacuminate, acute, sparsely ciliate above, 3-nerved, membranous. *Valve* 1, reduced to a subhyaline awned stipe, 1-nerved, subtending a pale and a bisexual flower; awn fine, about 9 times as long as the body of the stipe, scabrid. *Pale* longer than the valve, lanceolate-linear, hyaline. *Lodicules* 2, cuneate, subhyaline. *Ovary* oblong-elliptic in outline, glabrous; embryo about $\frac{1}{3}$ as long. *Grain* not seen.

Prostrate plant, rooting at the nodes; culm erect, slender, ribbed, glabrous; leaves arranged up the culm and distant from one another; leaf-sheath shorter than the internode of the culm, ribbed, ciliate on the margins above, glabrous; ligule scarious; blades usually shorter than the sheath, lanceolate or lanceolate-linear, acute, indistinctly veined, glabrous; inflorescence of 2—4 spike-like racemes (rarely solitary) arranged digitately or subdigitately at the end of the culm.

One species in South Africa, recorded from the Woodbush in the Transvaal, Natal, and a record from the Humansdorp district. (Type: *L. royleanum* Nees)

118a 6. **DIECTOMIS** Kunth, in Mem. Mus. Hist. Nat. Paris, vol. 2, p. 69 (1815)

Spikelets 2-nate, one sessile, the other peduncled, differing in sex and shape. *Joints* of rhachis and peduncle similar, cuneate, 2-toothed above, long-ciliate. *Sessile spikelet* wedged in between the joint and the peduncle, awned. *Flower* 1. *Glumes* unequal; lower linear-lanceolate, shortly acumin-

ate, deeply grooved on the back; upper boat-shaped, 2-lobed, with a long fine awn from the sinus. *Valves* 2; lower lanceolate-linear, deeply grooved on the back, with inflexed ciliate margins, without a flower or pale; upper boat-shaped, 2-lobed, with a long stout awn from the sinus, subtending a pale and the bisexual flower. *Pale* hyaline, lanceolate. *Lodicules* 2, cuneate. *Stamens* 3. *Ovary* ellipsoid; styles 2, divergent; stigmas plumose. *Peduncled spikelet* barren. *Lower glume* elliptic, 13-nerved, shortly 2-lobed, with a long fine awn from the sinus; upper glume lanceolate, shortly acuminate, with inflexed margins.

Annual; culm slender, branched; sheath of leaf finely ribbed, glabrous; blade linear, somewhat flaccid, ribbed, glabrous; inflorescence of many-jointed solitary racemes, supported by a spathe and terminating the culms and their branches and massed into a false subfastigate panicle; sessile spikelets falling with the contiguous joint and the accompanying pedicelled spikelet.

Species 1, found in the tropics of both hemispheres; the South African record from the Waterberg district of the Transvaal. (Type: *D. fastigiata* (Sw.) Kunth)

119 7. ISCHAEMUM Linn., Sp. Pl., ed. 1, p. 1049 (1753)

Spikelets 2-nate, both alike or differing only in sex or more or less heteromorphous with one peduncled and the other sessile. *Sessile spikelets* dorsally compressed, often rather broad, deciduous with the adjacent internode of the rhachis and peduncle. *Flowers* 1—2, when 2 then the lower male and the upper usually bisexual. *Glumes* equal or subequal; lower dorsally flattened or somewhat convex, usually coriaceous below, chartaceous and markedly nerved upwards, rarely concave and more or less chartaceous throughout, more or less 2-keeled, with inflexed margins; upper boat-shaped, keeled at least above, sometimes awned. *Valves* 2, rigidly membranous to hyaline, lower mucicous, empty or subtending a male flower; upper usually 2-fid and awned from the sinus, rarely mucronate or mucicous, subtending a bisexual flower. *Pales* more or less equalling their valves, hyaline. *Lodicules* 2, cuneate. *Stamens* 3, sometimes smaller or rudimentary in the fertile flower. *Stigmas* linear-oblong, laterally exerted. *Grain* oblong or lanceolate in outline, dorsally compressed; embryo reaching to the middle of the grain. *Peduncled spikelet* either like the sessile in sex and form or male or more or less reduced, sometimes apparently laterally compressed with a median keel owing to the more or less complete suppression of one side, falling entire from its peduncle.

Generally perennials; culm smooth or ribbed, glabrous or sometimes hairy at the nodes; leaf-sheath ribbed, glabrous or pilose; blade flat with an evident but not very prominent midrib and with distinct lateral ribs, glabrous or pilose; ligule membranous; inflorescence of compressed 2-nate digitate or fascicled racemes; rhachis readily disarticulating; internodes flattened or subconcave on the inner side, often stout; peduncles similar to the internodes.

Species about 50, natives of South America and the tropics of the Old World; 6 species in South Africa, recorded from the Transvaal, Zululand, Natal, through the coastal area to the Knysna district. (Type: *I. muticum* L.)

119a 8. SEHIMA Forsk., Fl. Aegypt. Arab., p. 178 (1775)

Spikelets 2-nate, one sessile, the other peduncled, those of each pair differing in sex and (in the African species) also much in shape. *Sessile spikelets* deciduous together with the adjacent internode of the rhachis and the peduncle. *Flowers* 2; lower male; upper bisexual. *Glumes* equal or subequal; lower deeply grooved, rarely flat, 2-toothed or 2-mucronate, more or less chartaceous, acutely 2-keeled upwards, with inflexed margins, with the

keels winged; upper boat-shaped, keeled upwards, with a bristle-like awn. *Valves* 2, hyaline; lower entire, mucous, subtending the male flower; upper 2-fid, awned from the sinus, subtending the bisexual flower. *Pales* more or less equalling their valves, hyaline. *Lodicules* 2, cuneate. *Stamens* 3. *Stigmas* linear-oblong, laterally exerted. *Grain* oblong in outline, obtusely 3-angled; embryo reaching to the middle of the grain. *Peduncled spikelets* flat, with (in the African species) a strongly nerved or ribbed lower glume, tardily separating from its peduncle; peduncle sublinear and parallel with the internode of the rachis. *Valves* 2; the upper sometimes subtending a male flower; the lower barren.

Perennials; culm smooth, glabrous; leaf-sheath ribbed, glabrous; blade flat, narrowed into a setaceous portion, closely ribbed, without an evident midrib, glabrous, scabrid to the touch; ligule a fringe of long hairs; inflorescence a spike-like raceme, usually gently curved; internodes of the rachis similar to the peduncles.

Species about 6, natives of Africa, India, and North Africa; 1 species recorded from the Transvaal. (Type: *S. ischaemoides* Forsk.)

125 9. URELYTRUM Hack., Engl. & Prantl Pflanzenfam., vol. 2, pt. 2, p. 25 (1887)

Spikelets 2-nate, one sessile, the other peduncled, those of each pair differing in shape and sex. *Sessile spikelet* deciduous with the adjacent internode of the rachis and the peduncle. *Flowers* 2, the lower male; the upper bisexual. *Glumes* equal or subequal; lower coriaceous, dorsally flattened, 2-keeled, mucous; upper subchartaceous or membranous, boat-shaped, keeled. *Valves* 2, hyaline, subequal, slightly shorter than the glumes, mucous; lower 2-nerved, subtending the male flower; upper 3—5-nerved, subtending the bisexual flower. *Pales* hyaline, almost equalling their valves, 2-nerved. *Lodicules* 2, cuneate. *Stamens* 3. *Stigmas* linear, laterally exerted. *Grain* narrow-oblong in outline, terete at the middle; scutellum reaching to the middle; hilum basal, obovate. *Peduncled spikelet* with the lower glume narrowed into a subulate, often very long, awn, otherwise as in the sessile spikelet, or more or less reduced sometimes to a pair of rudimentary glumes, the lower of which is represented by a long awn flattened and widened at the base. *Valves* 2, both subtending male flowers, or both valves absent.

Perennials; culm smooth, glabrous; leaf-sheath ribbed, glabrous, sometimes ciliate inside at the junction with the blade; blade narrow-linear or convolute, ribbed, without a very prominent midrib, glabrous; ligule almost hyaline; inflorescence a long cylindric spike-like raceme at the end of the culm, rarely racemes in pairs; internodes of rachis linear-oblong, very concave, obliquely articulated below the spikelet, glabrous or pubescent.

An African genus of about 7 species; 1 species in South Africa, recorded from the Transvaal, Natal, Basutoland, and the Orange Free State; also recorded from the Vryburg district. (Type: *U. agropyroides* Hack.)

126 10. RHYTACHNE Desv., in Hamilton Prodr., Pl. Ind. Occ., p. 11 (1825)

Spikelets 2-nate, both sessile or one subsessile or pedicelled, differing in sex and shape, more or less adpressed to the concavity of the joints of the rachis. *Sessile spikelet*:—*Flowers* 2; the lower male; the upper bisexual. *Lower glume* lanceolate, 7-nerved, transversely rugose on the lower half, coriaceous; upper glume lanceolate, boat-shaped, with an acute keel, produced into an awn shorter than the glume. *Lower valve* lanceolate, deeply concave, subtending a pale and the male flower. *Pale* subsimilar to the

valve. *Lodicules* 2, deeply 2-lobed. *Stamens* 3. *Upper valve* lanceolate, subhyaline, subtending a pale and the bisexual flower. *Pale* hyaline, about $\frac{1}{2}$ as long as the valve. *Stamens* 3. *Ovary* ellipsoid; stigmas laterally exerted, plumose. *Lodicules* 2, deeply 2-lobed. *Subsessile spikelet* reduced to a flat lanceolate awned ciliate structure.

Annuals or perennials, with slender 1—4-noded culms; culms ribbed, glabrous; leaf-sheath ribbed, glabrous; blades setaceous; inflorescence a simple spike at the ends of the culms; joints of rhachis spatulate-linear, convex and ribbed on the back, somewhat concave on the face.

Species 7, natives of Africa and Madagascar; 1 species recorded from Natal. (Type: *R. rotboelliioides* Desv.)

127a

11. HEMARTHRIA R. Br., Prodr., p. 207 (1810)

Spikelets 2-nate, one sessile and the other peduncled but appearing sessile owing to the peduncle being fused with the adjacent internode of the rhachis, alike in sex and more or less in shape. *Sessile spikelet* sunk in a concave hollow on the inner face of the rhachis. *Flower* 1. *Lower glume* lanceolate, obtuse, many-nerved, with the margins slightly inflexed and membranous, coriaceous; upper glume lanceolate, deeply concave, membranous. *Valve* lanceolate, subtending a pale and the flower, subhyaline. *Pale* similar to the valve. *Lodicules* 2, cuneate. *Stamens* 3. *Ovary* ellipsoid; styles erect, plumose. *Peduncled spikelet*:—*Flower* 1. *Lower glume* lanceolate, many-nerved, coriaceous; upper glume similar to the lower. *Valve* lanceolate, subhyaline, subtending a pale and the flower. *Pale* similar to the valve. *Flower* as in the sessile spikelet. *Grain* oblong in outline, dorsally slightly compressed; embryo about $\frac{2}{3}$ the length of the grain; hilum conspicuous, punctiform, subbasal.

Perennials, decumbent or ascending, with many-noded branched compound culms; culms ribbed, glabrous; leaf-sheath finely ribbed, glabrous; ligule very short, membranous; blade linear, finely ribbed, glabrous; inflorescence a spike, solitary or several to a culm.

Species about 8, natives of the warm countries of the Old World; 2 species in South Africa, fairly widely distributed. (Type: *H. compressa* R. Br.)

127b

12. COELORHACHIS Brongn. in Duperrey, Bot. Voy. Coquille, p. 64, t. 141 (1829)

Spikelets 2-nate, one sessile, the other peduncled, differing in sex and shape. *Sessile spikelet*:—*Lower glume* ovate-elliptic, obtuse, with the margins slightly inflexed and membranous in the upper part, 7-nerved, coriaceous; upper glume lanceolate, boat-shaped, sharply keeled. *Lower valve* lanceolate, concave, with the margins inturned, membranous, empty; upper valve lanceolate, with the margins inturned, sharply keeled, membranous, subtending a pale and the flower. *Pale* oblong-lanceolate, with inturned margins, 2-keeled, membranous. *Lodicules* 2, more or less quadrate, truncate. *Ovary* more or less ellipsoid; styles erect, plumose in the upper half. *Peduncle* stout, semi-terete, linear in outline.

Perennials; culm, ribbed, glabrous; leaf-sheath ribbed, long-linear, glabrous; ligule short, membranous, fimbriate; inflorescence spike-like, solitary and terminal on the culms; joints of rhachis clavate, convex on the back, somewhat concave on the face.

Species about 12, natives of the tropics of both hemispheres; 1 or perhaps 2 species in South Africa, recorded from Zululand, Natal, and the Stutterheim district. (Type: *C. muricata* Brongn.)

127c 13. ROTTBOELLIA Linn. f., Nov. Gramin. gen., p. 19 (1779)

Spikelets 2-nate, differing in sex and shape, one sessile, the other peduncled with the peduncle fused to the internode of the rachis. *Sessile spikelet*:—*Flowers* 2. *Lower glume* more or less ovate in outline, boat-shaped, about 9-nerved, narrowly keeled on the uppermost part, coriaceous; lower glume lanceolate-elliptic, with slightly inflexed margins, many-nerved, coriaceous. *Valves* 2; lower lanceolate, with membranous incurved margins, subtending a pale and a male flower; pale lanceolate, flat on the back, membranous; upper valve more or less hyaline, subtending a pale and a bisexual flower; pale ovate, hyaline. *Lodicules* 2, cuneate. *Ovary* ovate in outline; styles erect, plumose in upper half. *Stamens* in male and bisexual flowers 3. *Peduncled spikelet*:—*Flower* 1. *Lower glume* lanceolate, many-nerved, shortly beaked, ciliate on the margins, herbaceous; upper glume lanceolate, subacute, with narrow turned margins, 5-nerved, membranous. *Valves* 2; lower lanceolate, 3-nerved, subhyaline, empty; upper lanceolate, 3-nerved, subtending a pale and a male flower; pale elliptic, 2-keeled on the back, 2-fid at the apex. *Lodicules* 2, cuneate. *Stamens* 3. *Grain* broadly oblong in outline or ellipsoid; hilum large; embryo almost as long as the grain.

Annuals; culms branched, stout, ribbed, glabrous; leaf-sheath ribbed, pilose from bulbous-based hairs; ligule narrow, submembranous, ciliate, long-linear, with an evident midrib, glabrous; inflorescence spike-like, solitary and terminal on the branches of the culm; joints of rachis dorsally flattened below, widely cup-shaped and hollowed out above.

Species 2 or 3, natives of the tropics of the Old World; 1 species in South Africa, recorded from the Transvaal and Natal.

131 14. TRACHYPOGON Nees, Agrost. Brasil, p. 341 (1829)

Spikelets 2-nate, unequally peduncled, those of each pair differing in sex and shape, sometimes solitary and peduncled at the base of the inflorescence; peduncles fused towards the base with each other and the adjacent internode of the rachis; longer peduncle disarticulating very obliquely; shorter peduncle sometimes so short that the spikelet is subsessile. *Subsessile* (or shortly peduncled) *spikelet*:—*Flower* 1, male or absent. *Lower glume* oblong to lanceolate-oblong, obtuse or truncate, 5–9-nerved, convex on the back, firmly chartaceous to coriaceous, pilose; upper thinner in texture than the lower, lanceolate, acute, 3-nerved. *Valves* 2, hyaline; lower empty; upper subtending a male flower. *Pale* 0. *Long-peduncled spikelet*:—*Flower* 1. *Glumes* subsimilar to those of the subsessile spikelet. *Valves* 2; lower hyaline, 2-nerved, empty; upper stiptiform, hyaline at the base, cartilaginous upwards, 3-nerved at the base, passing into a flexuous or kneed pilose awn, subtending a pale (when present) and a bisexual flower. *Pale* very small, hyaline, sometimes absent. *Lodicules* 2. *Stamens* 3. *Ovary* ellipsoid; styles laterally exserted; stigmas plumose.

Densely caespitose perennials, very rarely annuals(?); culm more or less slender, wiry, conspicuously bearded below the nodes; beards appressed, covering the constricted nodes; leaf-sheath closely ribbed, glabrous or sparsely pilose; blade narrow-linear or convolute, closely ribbed, without a prominent midrib, glabrous or sparsely pilose; ligule almost scarious; inflorescence a cylindric spike-like raceme, solitary, rarely 2-nate, terminal; internodes of rachis semi-terete, very obliquely articulated below the spikelets.

Species about 10, natives of Africa, Madagascar, and most of the hotter regions of America; 3 species in South Africa, recorded from the Transvaal, Zululand, Natal, Basutoland, through the coastal area to the Alexandra district. (Type: *T. montufari* Nees)

132 15. ELYONURUS Humb. & Bonpl. ex Willd., Sp. Pl., vol. 4, p. 941 (1806)

(*Elionurus* H. & B.)

Spikelets 2-nate, one sessile, the other peduncled, usually similar in form, differing in sex, usually awnless. *Sessile spikelet* deciduous with the adjacent internode of the rhachis and the accompanying peduncle. *Flower* 1. *Lower glume* elliptic-ovate, produced into 2 stiff processes, densely villous; upper lanceolate, subacuminate, 1-keeled, pubescent. *Valves* 2, hyaline; lower valve empty; upper subtending a pale and a bisexual flower. *Pale* minute, delicately hyaline. *Lodicules* 2, cuneate. *Stamens* 3. *Ovary* ellipsoid; styles laterally exerted, plumose above. *Peduncled spikelet* 1-flowered or barren. *Lower glume* ovate, acuminate, entire or 2-fid, almost flat on the back, villous; upper subhyaline. *Valves* 2, both hyaline; lower valve empty; upper valve subtending a minute hyaline fimbriated scale and a male or bisexual flower, sometimes flower absent.

Generally caespitose aromatic perennials; culm smooth; villous below the nodes; leaf-sheath ribbed, glabrous or sometimes ciliate at the junction with the blade; ligule very short, membranous, shortly ciliate, with long hairs from the back; blade linear or filiform, ribbed, with a prominent midrib, glabrous; inflorescence a solitary spike-like raceme, solitary, terminal, villous; internodes of rhachis compressed, with oblique not appendaged tips, disarticulating below the spikelet, usually villous.

Species about 19, natives of the tropical and subtropical regions of both hemispheres; 3 species in South Africa, recorded from the Transvaal, Bechuanaland, Swaziland, Zululand, Natal, Basutoland, the Orange Free State, and through the coastal area to the Uitenhage district; also recorded from the Vryburg district. (Type: *E. tripsacoides* H. B. & K.)

133 16. ARTHRAXON Beauv., Agrost., p. 111, t. 11, f. 2 (1812)

Spikelets 2-nate, differing in sex and structure, one sessile, the other peduncled. *Sessile spikelet* 1-flowered. *Lower glume* linear-lanceolate, convex on the back, concave on the face, with narrow membranous margins, with a row of papillae on each side and each papilla with a setose hair, 4-nerved, coriaceous; upper lanceolate-linear, concave, subacuminate, somewhat keeled, with a broad hyaline margins, 3-nerved, membranous. *Valve* 1, subtending a pale and a bisexual flower, lanceolate, deeply concave, with a long awn from the back near the base, membranous. *Pale* linear-lanceolate, subacuminate, concave, subhyaline. *Lodicules* 2, cuneate. *Stamens* 3. *Ovary* long-linear in outline; style plumose in the upper half. *Peduncled spikelet* 1-flowered. *Peduncle* somewhat flattened, subclavate. *Lower glume* lanceolate, concave, with a few cilia on the upper part, 7-nerved, membranous; upper lanceolate, concave, 3-nerved, subhyaline. *Valve* 1, subtending a pale and a male flower; linear-lanceolate, 1-nerved, hyaline. *Pale* similar to the valve. *Lodicules* 2, cuneate.

Annuals or perennials; culm slender, ribbed, glabrous; leaves spaced along the culms; leaf-sheath ribbed, ciliate from bulbous-based hairs, glabrous; ligule membranous; blade ovate-lanceolate, acuminate, cordate and amplexicaul at the base, toothed, with cilia from the teeth, finely nerved, without a prominent midrib, glabrous; inflorescence spicate, arranged in a digitate manner at the end of the culm; joints of rhachis flat on the face, convex on the back, scantily pilose.

Species about 20, natives of the tropical and subtropical zones of the Old World; 1 species recorded from the eastern Transvaal. (Type: *A. ciliaris* Beauv.)

134 17. ANDROPOGON Linn., Sp. Pl., ed. 1, p. 1045 (1753)

Spikelets 2-nate, one sessile, the other peduncled, those of each pair differing in sex and mostly also more or less in shape and size, or those of the

lowest pair of the lowest raceme homogamous (male or imperfect). *Sessile spikelet* falling with the adjacent internode of the rhachis and the accompanying peduncle; callus short, mostly obtuse, shortly bearded. *Flower* 1, bisexual in the spikelet differing from the peduncled spikelet. *Glumes* equal to subequal, subcoriaceous to membranous; lower flat, concave, or channelled on the back, with sharply inflexed margins at least from the middle upwards, 2 keeled; upper more or less boat-shaped, keeled upwards, 1—3-nerved, sometimes awned. *Valves* 2, usually ciliate or ciliate; lower 2-nerved, without a flower or pale, hyaline; upper usually 2-fid or 2-lobed, with an awn (very rarely without) from the sinus, subtending the bisexual flower and sometimes a pale, awned with the awn 2—8 times as long as the valve. *Grain* narrowly lanceolate to oblong in outline, subterete to plano-convex; embryo about $\frac{1}{2}$ the length of the grain. *Peduncled spikelet* 1-flowered, sometimes barren or represented by the peduncle only. *Lower glume* lanceolate, shortly awned or mucronate, usually several-nerved, often ciliate; upper thinner in texture, lanceolate, acute, sometimes produced into a short awn. *Valves* (when present) 2, hyaline; lower empty; upper subtending a male flower, or empty. *Peduncle* sometimes up to 4 times as long as the adjacent internode of the rhachis, linear, linear-oblong, or spatulate, more rarely semi-terete, cup-shaped at the apex and generally projecting slightly on the inner face of the spikelet, usually long ciliate.

Perennials; culm smooth, more rarely distinctly ribbed; leaf-sheath ribbed, sometimes ciliate inside at the junction with the blade, glabrous; ligule ciliate (sometimes the cilia very minute); blade linear, flat or longitudinally folded, more rarely filiform, closely ribbed, with a distinct midrib, glabrous; inflorescence of digitate spike-like racemes terminating the culm or, when the culm is branched, the branches of the culm; racemes usually 2-nate, more rarely solitary or 3-nate, subtended by a spathe, but sometimes remote from the spathe, ciliate to densely villous; internodes of the rhachis similar to the peduncle of the peduncled spikelet.

Species about 100, mostly in the tropics of both hemispheres; 10 species in South Africa, widely distributed from South West Africa and the Transvaal southwards, but absent from the central districts. (Type: *A. distachyus* L.)

134a

18. SORGHUM Pers., Syn. Pl., vol. 1, p. 101 (1805)

Spikelets 2-nate, one sessile, the other peduncled, those of each pair differing in sex and shape. *Sessile spikelet* falling with the adjacent internode of the rhachis and the accompanying peduncled spikelet or at least with its peduncle. *Flower* 1. *Glumes* equal, coriaceous (at least when mature), rarely permanently chartaceous, muticous; lower with a broad flattened or convex back, with the margins narrowly inflexed near the tips; upper boat-shaped, keeled upwards, with narrow hyaline margins, ciliate above, sometimes mucronate. *Valves* 2, hyaline, ciliate; lower 2-nerved or nerveless, empty; upper oblong to ovate, 2-toothed or 2-lobed, with a perfect or variously reduced awn or mucro arising from the sinus, rarely entire and mucronate or muticous, 1—2-nerved, subtending the bisexual flower. *Lodicules* 2, sometimes ciliate. *Pale* hyaline, often minute or 0. *Stamens* 3. *Ovary* ellipsoid; styles terminal or subterminal; stigmas plumose, laterally exerted. *Grain* mostly obovoid (in cultivated forms globose or subglobose). *Peduncled spikelet* 1-flowered or barren. *Glumes* awnless. *Valves* 2, hyaline; lower empty; upper subtending a pale and a male flower or empty. *Pale* hyaline, linear. *Peduncle* linear, semi-terete, or flat on the face and convex on the back, shorter than the sessile spikelet.

Annuals or perennials; culm ribbed or smooth, glabrous or sometimes villous at the nodes; leaf-sheath ribbed, glabrous or sometimes pilose within at the junction with the blade; ligule scarious, sometimes with long hairs from the back; blade

linear, more rarely filiform, distinctly ribbed, with or without a distinct or prominent midrib, sometimes scarious on the margins, glabrous or pilose with bulbous-based hairs; inflorescence on open panicle; primary branches often in whorls on the main rhachis; main rhachis terete or angled, glabrous; internodes of ultimate rhachis similar to the peduncles.

Species about 35, natives of the tropics and subtropics of both hemispheres, very few extending into the temperate zone; 6 species in South Africa, extending from the Transvaal, Natal, and the coastal region to the Cape and to Namaqualand; also recorded from some of the north-western districts of the Cape Province. (Type: *S. vulgare* Pers.)

134b **19. VETIVERIA** Thouars ex Virey in Journ. de Pharm., vol. 13, p. 499 (1887)

Spikelets 2-nate, one sessile, the other peduncled, differing in sex and shape. *Sessile spikelet* falling with the adjacent joint of the rhachis and the accompanying peduncled spikelet or at least with the accompanying peduncle. *Flower* 1. *Lower glume* linear-lanceolate, convex on the back, deeply concave, obtuse, with short spines on the back; upper subsimilar to the lower, but with broad hyaline ciliate margins and a single row of spines on the back. *Valves* 2; lower linear in side view, curved, shortly 2-lobed, 1-nerved, with an awn from the sinus about as long as the valve, empty, subhyaline; upper linear in side view, with broad ciliate margins, deeply concave, subtending a pale and a bisexual flower, hyaline. *Pale* about $\frac{1}{3}$ as long as the valve, hyaline. *Lodicules* cuneate. *Stamens* 3. *Ovary* more or less ellipsoid; style plumose above. *Grain* oblong in outline. *Peduncled spikelet* 1 flowered. *Lower glume* lanceolate, convex on the back, concave on the face, 5-nerved, with a few spines on the back; upper lanceolate, deeply concave, with broad ciliate hyaline margins. *Valves* 2; lower lanceolate, deeply concave, with ciliate hyaline margins, empty; upper linear-lanceolate, deeply concave, ciliate near the tip, subtending a pale and a male flower, hyaline. *Pale* linear-oblong, about 3 times shorter than the valve, fimbriate at the apex, hyaline. *Lodicules* quadrate. *Stamens* 3. *Peduncle* linear, flat on the face, convex on the back.

Coarse perennials with stout rhizomes; culm stout, sometimes over 6 ft. high, scarcely ribbed, glabrous; leaf-sheath finely ribbed, glabrous; ligule a fringe of short hairs; blade linear, finely ribbed, with a distinct midrib, pilose within at the junction with the sheath, otherwise glabrous; inflorescence a number of spikes arranged in a panicle; joints of rhachis of spikes linear, flat on the face, convex on the back, with a few scattered spines, pilose at the articulations.

Species about 7, in the tropics of the Old World; 2 species in South Africa, recorded Ngamiland and Natal. (Type: *V. zizanioides* (L.) Stapf = *V. odorata* Virey)

134c **20. CHRYSOPOGON** Trin., Fund. Agrost., p. 187 (1820)
(*Rhaphis* Lour.)

Spikelets 3-nate, 1 sessile and 2 peduncled, the trio falling entire, rarely 2-nate (one sessile and the other peduncled) and both falling with the adjacent internode of the rhachis. *Sessile spikelet* 1-flowered. *Glumes* subequal; lower coriaceous or chartaceous, involute, with a rounded back, or complicate and more or less keeled upwards; upper boat-shaped, more or less keeled, sometimes awned; awn, when present, as long as or slightly longer than the glume. *Valves* 2, hyaline; lower 2-nerved, empty; upper linear, entire, 2-toothed or 2-lobed, awned, subtending a pale and a bisexual flower. *Pale* narrow, delicately hyaline. *Lodicules* 2, glabrous. *Stamens* 3. *Ovary* ellipsoid; style plumose above, laterally exerted low down. *Grain*

linear in outline; embryo $\frac{1}{2}$ the length of the grain. *Peduncled spikelet* 1-flowered or barren. *Lower glume* lanceolate, awned or awnless, when awned then awn $\frac{1}{2}$ as long as glume, chartaceous or membranous; upper somewhat thinner than the lower, mucronate. *Valves* 2, hyaline; lower empty; upper long-ciliate, subtending a pale and a male flower or flower absent. *Pale* linear, $\frac{1}{3}$ as long as its valve, hyaline.

Mostly perennials; culm finely striate or smooth, glabrous; leaf-sheath ribbed, glabrous; ligule membranous, sometimes ciliate; blade longitudinally folded, ribbed, sometimes scabrid on the keel and margins, glabrous or with occasional long stiff bulbous-based hairs on the margins; inflorescence a panicle, consisting of a number of whorled capillary primary branches from the main rachis, with each branch bearing 3 spikelets at its apex.

Species about 20, mostly natives of the warm regions of both hemispheres; 1 species in America; 2 species in South Africa, recorded from the Transvaal and Bechuanaland. (Type: *C. gryllus* (L.) Trin.)

134d 21. BOTHRIOCHLOA O. Kuntze, Rev. Gen., vol. 2, p. 762 (1891)
(*Amphilophis* Nash)

Spikelets 2-nate, one sessile, the other peduncled, differing in sex except sometimes in the lowermost pair which may be homogamous (male or neuter), similar in shape or the peduncled reduced and smaller. *Sessile spikelet* (of heterogamous pairs) 1-flowered, deciduous with the adjacent internode of the rhachis and the peduncle. *Glumes* equal, thinly chartaceous to membranous, lanceolate or elliptic-lanceolate, flat on the back, usually with a circular depression in the middle, ciliate, pilose on the back; upper lanceolate, shortly acuminate, distinctly keeled, glabrous. *Valves* 2; lower hyaline, empty; upper reduced to an awned stipe, with the awn 3—7 times as long as the stipe, subtending the bisexual flower. *Pale* 0, or very minute. *Lodicules* 2, glabrous. *Stamens* 3. *Ovary* ellipsoid; style plumose above, exerted laterally. *Grain* oblong in outline; embryo about $\frac{1}{2}$ the length of the grain. *Peduncled spikelet* usually barren, more rarely 1-flowered, falling entire from the peduncle. *Lower glume* lanceolate, subacute; upper about $\frac{1}{2}$ the length of the lower, hyaline. *Valves* 2 or 0, sometimes 1; the lower sometimes subtending a male flower.

Perennials; culm smooth or finely striate, glabrous or sometimes villous at the nodes; leaf-sheaths shorter than the internodes of the culm, ribbed, glabrous, sometimes long-ciliate at the junction with the blade; ligule membranous, sometimes ciliate; blade narrow-linear, usually with a distinct or prominent midrib, usually covered with bulbous-based hairs, usually scabrid to the touch; inflorescence of simple or branched spike-like racemes arranged digitately or sub-digitately at the end of the culm or arranged along a main rachis; internodes of rhachis similar to the peduncles of the peduncled spikelet.

Species about 20, natives of the warmer regions; 4 species in South Africa, found in the Transvaal, Swaziland, Natal, Griqualand East to the Knysna district; also recorded from South West Africa and the Kimberley district. (Type: *B. anamitica* O. Kuntze = *B. glabra* (Roxb.) A. Camus)

134e 22. DICHANTHIUM Willemet in Usteri, Neue Ann. der. Bot., vol. 12, p. 11 (1796)

Spikelets 2-nate, one sessile and usually awned, the other peduncled and awnless. *Sessile spikelet* 1-flowered or those at the base of the raceme awnless, barren or with a male flower, falling with the adjacent internode of the rhachis and the peduncle of the peduncled spikelet. *Lower glume* lanceolate or elliptic-oblong, almost truncate, membranous, pilose; upper

somewhat thinner in texture, keeled, ciliate. *Valves* 2; lower lanceolate, subhyaline, empty; upper reduced to an awned stipe, with the awn 4—6 times as long as the stipe, subtending a bisexual flower. *Lodicules* 2, minute, glabrous. *Stamens* 3. *Ovary* ellipsoid; style plumose above, exerted at or above the middle or near the tips. *Grain* oblong in outline; embryo rather more than $\frac{1}{2}$ the length of the grain. *Peduncled spikelet* 1-flowered or barren, falling entire from the peduncle. *Lower glume* oblong, truncate, pilose; upper ciliate above, membranous. *Valve* 1 or valves absent, if present, then hyaline, empty or subtending a male flower.

Perennials; culm smooth or finely striate, villous at the nodes; leaf-sheath shorter than the internode of the culm, strongly ribbed, glabrous, sometimes pilose within at the junction with the blade; ligule membranous, sometimes with long hairs from the back; blade narrow-linear, with a distinct or prominent midrib, sometimes scabrid to the touch, glabrous or sparsely covered with bulbous-based hairs; inflorescence of 3—9 spike-like racemes arranged digitately or subdigitately at the end of the culm or arranged up a main rachis.

Species about 15, in the tropics of both Worlds; 4 species in South Africa, extending from South West Africa, Namaqualand to the Herbert and Calvinia districts; also found in the Transvaal and Natal. (Type: *D. nodosum* Willem. = *D. annulatum* (Forsk.) Stapf)

134f

23. SCHIZACHYRIUM Nees, Agrost. Bras., p. 331 (1829)

Spikelets 2-nate, one sessile, the other peduncled, differing in sex and more or less in shape and size. *Sessile spikelet* 1-flowered, falling with the adjacent internode of the rachis and the accompanying peduncled spikelet. *Glumes* equal or subequal; lower more or less convex or flat on the back at least from the middle upwards, with sharply inflexed and mostly narrow margins, 2-keeled, with the keels running out into teeth or mucros, chartaceous to subcoriaceous; upper thinner to membranous, narrowly boat-shaped to dorsally flattened, keeled (at least upwards), 1—3-nerved, with the delicate margins ciliolate. *Valves* 2, hyaline, ciliolate; lower membranous downwards, empty; upper usually 2-fid or 2-toothed, more rarely 2-partite or entire, with an awn continuous with or from the sinus of the lobes, subtending a bisexual flower. *Pale* 0, or represented by a microscopic hyaline scale. *Lodicules* 2, glabrous. *Stamens* 3, rarely 2. *Ovary* subglobose; style plumose above, laterally exerted low down. *Grain* narrowly linear in outline or tapering upwards, subterete. *Peduncled spikelet* 1-flowered or barren. *Lower glume* subcoriaceous, awned, with the awn about as long as the glume; upper membranous, acuminate. *Valves* 2, hyaline, lanceolate, acuminate; both empty or the upper sometimes subtending a male flower. *Peduncle* linear-oblong, flattened, slightly concave on the face, long-ciliate.

Perennials; culm smooth, glabrous; leaf-sheath ribbed, glabrous, sometimes ciliate at the junction with the blade; ligule membranous; blade narrow-linear, longitudinally folded, closely ribbed, with the midrib forming a keel; inflorescence a lax panicle formed of long cylindric spike-like racemes, solitary and terminating the branches of the culm, with a spathe at the base of the peduncle of each raceme; internodes of rachis similar to the peduncle of the peduncled spikelets.

Species about 50, natives of the tropics of both hemispheres; 5 species in South Africa, recorded from the Transvaal, Zululand, and Natal; also from the Vryburg and Kuruman districts.

134g

24. CYMBOPOGON Spreng., Pl. Pugill., vol. 2, p. 14 (1815)

Spikelets 2-nate, one sessile, the other peduncled, those of each pair usually differing in sex and more or less in shape; lowermost pair of spikelets of the lower or of both racemes homogamous (usually male). *Sessile spikelet* of

the heterogamous pair falling with the adjacent internode of the rachis and the accompanying peduncle of the peduncled spikelet. *Flower* 1. *Glumes* equal or subequal, more or less chartaceous; lower almost flat or slightly depressed, or narrowly grooved on the back, 2-keeled, with the margins sharply inflexed at least from the middle upwards; upper more or less boat-shaped, keeled upwards, usually 1-nerved. *Valves* 2, ciliate or ciliolate; lower entire, 2-nerved, empty; upper 2-fid or 2-lobed, hyaline, awned, rarely firmer and almost stipe-like below the insertion of the awn, subtending the bisexual flower; column of awn, if any, smooth. *Pale* 0. *Lodicules* 2, minute, glabrous. *Stamens* 3. *Ovary* subglobose; styles plumose above, laterally exerted. *Grain* oblong in outline; embryo about $\frac{1}{2}$ the length of the grain. *Peduncled spikelet* usually 1-flowered. *Glumes* muticous; lower chartaceous to subchartaceous; upper thinner. *Valves* 2; lower hyaline, 2-nerved, empty; upper sometimes subtending a male flower. *Peduncle* linear, flat on the face, rounded on the back, usually obliquely cup-shaped at the apex, villous.

Perennials, often robust; culm simple or branched, smooth, glabrous; leaf-sheath shorter than the internode of the culm, ribbed, glabrous or very rarely pilose at the junction with the blade; ligule membranous or scarious; blade linear, tapering to a fine point, flat, longitudinally folded, convolute or almost filiform, with the midrib distinct and the lateral veins fine or distinct, sometimes scabrid to the touch, glabrous; inflorescence usually of 2-nate spike-like racemes subtended by a common spathe, the whole either solitary and terminal on the culm or on branches of the culm; internodes of rachis similar to the peduncles of the peduncled spikelet.

Species about 30, in tropical and subtropical countries; 8 species in South Africa, with a wide distribution from South West Africa and the Transvaal in the north to the south-western districts of the Cape Province; absent from the central districts. (Type: *C. schoenanthus* (L.) Spreng.)

NOTE.—R. Pilger in *Engler and Prantl*, vol. 14e, p. 166 (1940), reduces this genus to a section of *Andropogon* L.—E. P. P.

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25. HYPARRHENIA Anderss. ex Stapf, *Flora Trop. Africa*, vol. 9, p. 291 (1918)

Spikelets 2-nate, one sessile, the other peduncled, those of each pair differing in sex and more or less in shape, or those of the lowest pair or pairs homogamous, sometimes male. *Sessile spikelet* of heterogamous pair falling with the adjacent internode of the rachis and the accompanying peduncle of the peduncled spikelet. *Flower* 1. *Glumes* equal, more or less chartaceous; lower lanceolate, truncate or acute, sometimes 2-toothed, rarely produced into 2-short awns, flat or rounded on the back, ciliate, usually pilose; upper narrowly and shallowly boat-shaped, rounded on the back below, very rarely awned, finely keeled towards the tip, 3-nerved. *Valves* 2, ciliate or ciliolate, one or both glabrous; lower hyaline, 2-nerved, empty; upper stipitiform, delicate at the base, gradually hardened above, 2-toothed, awned from the sinus and with the awn 3—12 times as long as the valve, subtending the bisexual flower; awn distinctly kneed, more or less hirtellous or subplumose. *Pale* 0, rarely a small hyaline scale. *Lodicules* 2. *Stamens* 3. *Ovary* more or less ovoid; styles plumose above, laterally exerted. *Grain* oblong in outline; embryo about $\frac{1}{2}$ the length of the grain. *Peduncled spikelet* 1-flowered or barren, falling entire from the peduncle. *Glumes* similar to the glumes of the sessile spikelet. *Valves* usually both developed, rarely 1 or 0; lower valve empty; upper valve subtending a male flower, more rarely a bisexual flower, or empty. *Peduncle* linear, more or less obliquely truncate and sometimes obscurely auricled at the apex, long-ciliate.

Perennials, slender or very robust; culm branched, smooth, glabrous; leaf-sheath shorter than the internode of the culm, ribbed, glabrous, sometimes pilose within at the junction with the blade; ligule scarious; blade usually narrow-linear, more rarely short and linear-lanceolate, with the midrib prominent beneath and sometimes almost one-third the breadth of the blade, with the lateral veins close and usually distinct, often scabrid to the touch; inflorescence of 2-nate spike-like racemes subtended by a spathe; 2 or more pairs of such racemes subtended by a common spathe and the whole forming a spatheate panicle; pairs of racemes terminating long branches of the main rhachis and exerted from the spathes, or short and almost enclosed by the spathes, sometimes racemes very short and not visibly paired; spathes green or reddish brown, ribbed, glabrous; internodes of rhachis similar to the peduncle of the peduncled spikelet.

Species about 75, almost confined to Africa; 22 species in South Africa, widely distributed from South West Africa and the Transvaal to the south-western districts of the Cape Province, mostly absent from the central districts. ((Type: *H. pseudocymbaria* (Steud.) Stapf)

NOTE.—N. J. Andersson first published the name in *Nova Acta Upsal.*, series 3, vol. 2, pp. 231, 254 (1856), but Stapf gave a generic description.—E. P. P.

134i 26. MONOCYBIUM Stapf, Fl. Trop. Afr., vol. 9, p. 386 (1919)

Spikelets 2-nate, one sessile, the other peduncled, those of each pair differing in sex and structure. *Sessile spikelet* falling with the adjacent internode of the rhachis and the accompanying peduncle of the peduncled spikelet. *Flower* 1. *Glumes* subequal, thinly cartilaginous; lower lanceolate, flat on the back, usually winged on the upper portion; upper thinner in texture, boat-shaped, sometimes winged on the upper portion of the keel. *Valves* 2; lower hyaline, ciliate, empty; upper cartilaginous with a hyaline base and margins, deeply 2-fid, with a delicate awn from the sinus of the lobes, with the awn $1\frac{1}{2}$ —4 times as long as the valve, subtending a bisexual flower. *Pale* 0. *Lodicules* 2, cuneiform, glabrous. *Stamens* 3. *Ovary* ellipsoid; styles plumose, laterally exerted. *Grain* oblong in outline; embryo about $\frac{1}{2}$ the length of the grain. *Peduncled spikelet* usually 1-flowered, falling entire. *Lower glume* elliptic-lanceolate, acute, more or less flat on the back, pilose or villous; upper rounded on the back, subobtusely. *Valves* usually 2, hyaline; lower lanceolate, flat on the back, empty; upper sometimes absent, but, when present, often subtending a male flower. *Peduncle* linear.

Perennials; culm branched, smooth, glabrous; leaf-sheath shorter than the internode of the culm, finely ribbed, glabrous; ligule membranous; blade flat, linear, with a fine midrib and delicate veins, glabrous or sparsely covered with bulbous-based hairs; inflorescence a lax raceme of solitary spike-like racemes each subtended by a spathe; spathes on long filiform branches of the main rhachis, reddish brown, ribbed, acuminate, longer than the enclosed raceme, glabrous; internodes of the rhachis similar to the peduncles of the peduncled spikelets.

An African genus of 3 species, one of which is found in the Transvaal, Zululand, Natal, Basutoland to Pondoland; also recorded from the Barkly East district. (Type: *M. cerasiiforme* (Nees) Stapf)

134j 27. HETEROPOGON Pers., Syn. Pl., vol. 2, p. 533 (1807)

Spikelets 2-nate, one sessile, the other peduncled; spikelets on lower portion of raceme (1 to many pairs) alike in sex and shape; spikelets on upper portion of raceme differing in sex and strikingly so in shape; spikelets of homogamous pairs male or neuter, long persistent. *Sessile spikelet* of heterogamous pair 1-flowered, falling with the adjacent internode of the rhachis; callus long, pungent, densely bearded upwards. *Lower glume* linear-oblong, obtuse or truncate, flat on the back, with reflexed margins, pilose; upper linear, acute, prominently keeled. *Valves* 2, hyaline; lower empty; upper stipitiform from a very slender hyaline base, passing into a usually stout

kneed awn about 6—10 times as long as the valve, subtending a female or bisexual flower. *Pale* 0. *Lodicules* large or more or less reduced. *Stamens* 3. *Ovary* oblong in outline; style plumose low down, exserted terminally or laterally. *Grain* more or less linear in outline; embryo somewhat exceeding the middle of the grain. *Peduncled spikelet* often somewhat twisted, usually 1-flowered; lower glume lanceolate, acuminate, acute, flat on the back, winged on one side; upper thinner in texture, lanceolate, acuminate, acute, keeled. *Valves* 2, hyaline, 1-nerved, well developed or more or less reduced; upper empty; lower sometimes subtending a male flower. *Peduncle* linear, tapering to the base, glabrous.

Perennials; culm smooth, glabrous; leaf-sheath generally shorter than the internode of the culm, striate, glabrous; ligule very short, ciliate; blade narrow-linear, flat or longitudinally folded, with or without a distinct midrib, with fine lateral veins, smooth or scabrid, glabrous or sometimes sparsely hairy; inflorescence a solitary terminal spike-like raceme, with the awns very long and usually twisted together.

Species about 4, in tropical and subtropical regions of both hemispheres; 2 species in South Africa, widely distributed. (Type: *H. glaber* Pers.=*H. comortus* (L.) Beauv.)

134k 28. HYPOGYNIUM Nees, Agrost. Bras., p. 364 (1829) partly

Spikelets 2-nate, one sessile, the other peduncled, differing in sex and more or less in shape. *Sessile spikelet* 1-flowered, falling with the adjacent internode and the peduncle of the peduncled spikelet. *Lower glume* lanceolate, shortly acuminate, rounded on the back, concave on the face, 7-nerved, glabrous; upper lanceolate, flat on the back, with inturned margins, 3-nerved, glabrous. *Valves* 2, hyaline; lower empty; upper subtending a female flower, and sometimes a pale. *Pale* when present, about the length of the ovary. *Lodicules* 2, cuneate. *Staminodes* 3; anthers minute, barren. *Ovary* lanceolate in outline; styles plumose, exserted at or above the middle of the spikelet. *Peduncled spikelet* 1-flowered. *Lower glume* lanceolate, subacuminate, rounded on the back, concave on the face, 9-nerved, glabrous; upper similar to the lower, but 7-nerved. *Valves* 2, hyaline, lower lanceolate, subacuminate; upper subequalling the lower, subtending a male flower. *Lodicules* 2, quadrate. *Peduncle* short, terete, pilose above.

Perennials; culm smooth, glabrous; leaf-sheath finely ribbed, glabrous; ligule a narrow membrane; blade folded so that it appears terete, ribbed, glabrous; inflorescence of spike-like racemes arranged in a lax panicle; racemes on slender peduncles subtended by a linear spathe and exserted from the spathe; internode of rhachis terete, linear in outline, saucer-shaped above, glabrous.

Species 2; one found in tropical South America, the other recorded from Natal. (Type: *H. spathiflorum* (Kunth) Hack.)

NOTE.—1 found no pale subtended by the upper valve of the sessile spikelet.—E. P. P.

134l 29. SORGHASTRUM Nash in Britton, Man. Fl. North Un. St., p. 71 (1901)

Spikelets solitary, sessile, accompanied by a peduncle without a spikelet, 1-flowered. *Lower glume* lanceolate, somewhat flat on the back, with inturned margins, truncate, 9-nerved, pilose on the back; upper lanceolate, convex on the back, concave on the face, with inturned ciliate margins, 5-nerved, glabrous on the back. *Valves* 2, hyaline; lower more or less broadly linear, 2-keeled, with the margins on the upper part inflexed and ciliate, 2-nerved, empty; upper linear, 2-lobed, convex on the back, with the margins on the upper part inturned and ciliate, produced into a long awn from the sinus of the lobes, subtending a pale and a bisexual flower. *Pale*

delicate, hyaline, lanceolate, slightly longer than the ovary. *Lodicules* 2, cuneate. *Stamens* 3. *Ovary* ellipsoid; styles plumose. *The accompanying naked peduncle* about $\frac{3}{4}$ as long as the sessile spikelet, linear, long-pilose.

Perennials; culm faintly striate, glabrous; leaf-sheath finely ribbed, glabrous; ligule produced into 2-lobes; blade rolled, appearing terete, finely ribbed, glabrous; inflorescence a lax panicle; internode of rhachis about $\frac{3}{4}$ as long as the sessile spike, linear, with a cup and ball articulation, long-ciliate.

Species 10, natives of Africa and North and South America; 2 species in South Africa, recorded from the Transvaal and Zululand. (Type: *S. nutans* (L.) Nash)

NOTE.—Mr. C. E. Hubbard places this genus under *Sorghum* Pers.—E. P. P.

135 30. CLEISTACHNE Benth., in Hook. Ic. Pl., t. 1379 (1882)

Spikelet solitary, peduncled, with a ring of hairs at the base, falling entire from the thickened tips of the peduncle, 1-flowered. *Glumes* similar, elliptic in outline, almost truncate, rounded on the back, ciliate, delicately 7—9-nerved, pilose. *Valves* 2, hyaline, ciliate; lower 2-nerved, empty; upper 2-toothed or subentire, 3-nerved, with a twisted flexuous awn from the sinus or tip, subtending a pale and a bisexual flower. *Pale* minute, ciliate. *Lodicules* 2, broadly cuneate, ciliate. *Stamens* 3. *Ovary* subovoid; style plumose above, laterally exserted. *Grain* oblong or obovate-oblong in outline; embryo $\frac{1}{2}$ the length of the grain.

Annuals; culm stout, finely striate glabrous; leaf-sheath prominently ribbed, hispid with bulbous-based hairs; ligule scarious; blade involute, strongly ribbed, with a wide and prominent mid-rib, hispid with bulbous-based hairs; inflorescence a hairy panicle; main rhachis angled, hispid; primary branches more or less fascicled on the main rhachis.

An African genus of 3 species; 1 species in South Africa, recorded from the Transvaal. (Type: *C. sorghoides* Benth.)

136 31. THEMEDA Forsk., Fl. Aeg.—Arab., p. 178 (1775)

(*Anthistiria* L. fil.)

Apparent spikelet consisting of 4 sessile barren or male spikelets which form an involucre and which surround a short rhachis bearing 1 sessile and 2 peduncled spikelets; the whole group of 7 spikelets enclosed in a spathe. *Involucral spikelets* barren or 1-flowered, sessile, lanceolate, acuminate. *Lower glume* lanceolate or linear-lanceolate, acuminate, more or less flat on the back, glabrous or covered with stiff bulbous-based hairs; upper hyaline or membranous. *Valves* 2, hyaline; lower empty; upper empty or subtending a male flower. *Sessile spikelet* 1-flowered, densely villous at the base, usually awned. *Lower glume* thin or subchartaceous, oblong-lanceolate or oblong-elliptic, obtuse or truncate, somewhat flat on the back, usually shortly pilose; upper similar or thinner in texture. *Valves* 2, hyaline. *Lower valve* empty; upper reduced to a 2-lobed stipe, usually awned from the sinus, subtending a bisexual flower; awn when present, 6—13 times as long as the valve. *Pale* hyaline, small or 0. *Lodicules* 2, rather large, glabrous. *Stamens* 3. *Ovary* oblong in outline; style plumose above. *Grain* linear-obovate in outline, grooved on the face. *Peduncled spikelet* 1-flowered or barren, lanceolate, long-acuminate. *Lower glume* rounded on the back, glabrous or covered with stiff bulbous-based hairs; upper similar but narrower and distinctly keeled. *Peduncle* terete or flat on the face and convex on the back.

Perennials; culm smooth, glabrous; leaf-sheath shorter than the internode of the culm, ribbed, glabrous or with stiff bulbous-based hairs; ligule membranous,

finely ciliate; blade usually longitudinally folded, with fine veins and a distinct midrib, often scabrid, glabrous or sometimes pilose at the junction with the sheath; inflorescence formed of groups of spikelets subtended by a spathe; one or more of such groups subtended by a common spathe; the whole forming a lax panicle; groups of spikelets forming the panicle on slender branches of the culm, usually drooping; main spathe passing into a long acuminate point, ribbed, glabrous or covered with scattered bulbous-based hairs.

Species 10, natives of warm countries; 2 species in South Africa, very common, particularly abundant in the Transvaal, Natal, the Orange Free State, Griqualand West, and the central districts. (Type: *T. triandra* Forsk.)

140. 32. **ANTHEPHORA** Schreber, Besch. Gräser, vol. 3, p. 105, t. 44 (1810)

Spikelets 4—6-nate; each fascicle surrounded at the base by a spurious involucre formed by the squarrose-hardened lower glumes; fascicles of spikelets, falling entire. *Flower* 1. *Lower glume* oblong to lanceolate, firmly coriaceous, those of each fascicle confluent into a hardened base with distinct nerves on the inner side; upper hyaline, or coriaceous, or membranous, finely subulate from an ovate base. *Valves* 2, subsimilar; lower shorter than the glume, oblong, 5—7-nerved, hyaline, empty; upper equalling the lower firmer, 3-nerved, subtending a pale and a bisexual flower. *Pale* equalling the valve, 2-nerved. *Lodicules* 3. *Stamens* 3. *Ovary* lanceolate-oblong in outline; styles plumose above, exerted from or near the apex. *Grain* ellipsoid, enclosed in the spikelet; embryo about $\frac{1}{2}$ the length of the grain.

Perennials, tufted at the base; culm smooth, glabrous; leaf-sheath shorter than the internode of the culm, closely ribbed, glabrous or sometimes pilose within at the junction with the blade; ligule large, scarious; blade usually short, longitudinally folded, with a distinct midrib and close and fine lateral veins, thickened and usually more or less undulate on the margins, glabrous or finely pubescent, sometimes also with a few scattered long hairs; inflorescence a cylindric solitary spike; rhachis persistent, pubescent, ciliate round the somewhat prominent nodes.

Species 20, mostly African; 6 species in South Africa, recorded from the Transvaal, South West Africa, Basutoland, the Orange Free State, and several of the north-western districts of the Cape Province. (Type: *A. elegans* Schreb.)

143 33. **TRAGUS** Haller, Hist. Stirp. Helvet., vol. 2, p. 203 (1768)

Spikelets sessile, in clusters of 2—5, all fertile, or often one more or less reduced; clusters of spikelets deciduous. *Spikelets* 1-flowered. *Glumes* very dissimilar; lower facing the rhachis, minute, hyaline, sometimes suppressed; upper exceeding the valve, lanceolate, acute, rounded on the back, 3—5-nerved or -ribbed, membranous, with the ribs or nerves hispid or spine-hooked. *Valve* 1, lanceolate or lanceolate-oblong, acute, 1-nerved, glabrous. *Pale* as long as the valve, 2-nerved. *Lodicules* 2, broad, cuneate. *Stamens* 3. *Styles* distinct, very slender, plumose above, terminally exerted. *Grain* enclosed by the valve and pale, oblong to elliptic in outline; hilum punctiform; basal; embryo about $\frac{1}{3}$ the length of the grain.

Annuals or perennials, sometimes with creeping stems rooting at the nodes; culm smooth, glabrous; leaf-sheath shorter than the internodes of the culm, finely striate, glabrous; ligule a short ciliate rim; blades usually linear-lanceolate, acute, finely and closely nerved, without a distinct midrib, with small cartilaginous spines on the margins, glabrous; inflorescence spike-like, terminal, solitary, apparently unbranched; rhachis of inflorescence persistent, grooved on the internodes, pubescent.

Species 5—6, all African except 1 which is found in most warm countries; 4 species in South Africa, widely distributed. (Type: *T. racemosus* (L.) All.)

143a 34. *MOSDENIA* Stent, Bothalia, vol. 1, p. 170, pl. 1 (1922)

Spikelets solitary, sessile, muticous, subfalcate, arranged in more or less irregular whorls, falling entire. *Flower* 1. *Glumes* subequal to equal; lower subacuminate, 1-nerved, scabrid on the nerve, subhyaline; upper subfalcate, slightly gibbous at the base, fleshy. *Valve* 1, lanceolate-ovate, acuminate, acute, 1-nerved or sub-3-nerved. *Pale* nearly equalling the valve, minutely bilobed, faintly 2-nerved. *Lodicules* 2, broadly truncate or marginate. *Stamens* 3. *Ovary* ovoid; styles short, united at the base; stigmas laterally exserted near the base. *Grain* ovoid; hilum basal, punctiform; embryo $\frac{1}{3}$ the length of the grain.

Perennial, stoloniferous; culm finely striate, glabrous; leaf-sheath shorter than the internode of the culm, finely striate, glabrous; ligule short, ciliate; blade flat, narrowly linear, finely ribbed, without a distinct midrib, glabrous; inflorescence a cylindric unbranched solitary spike; rachis terete, grooved on the internodes, thinly pubescent.

Endermic; species 1, recorded from the Waterberg district of the Transvaal. (Type: *M. waterbergensis* Stent)

144 35. *MONELYTRUM* Hack. ex Schinz, Abhandl. des. Bot. Vereins der Prov. Brand., vol. 30, p. 140 (1888)

Apparent spikelet really a group of 2 complete spikelets and 2 spikelets reduced to awns; the group villous at the base. *True spikelet* 1-flowered, sessile. *Glume* solitary, lanceolate, 5-nerved, pilose below, scabrid above, awned, herbaceous; awn longer than the body of the glume, scabrid. *Valve* 1, lanceolate, 3-nerved, herbaceous, produced into a short awn. *Pale* of slightly thinner texture than the valve, lanceolate. *Lodicules* 0. *Stamens* 3. *Ovary* ellipsoid; styles plumose above.

Perennials; culm simple, smooth, terete, glabrous; leaves in a small basal tuft, with a few cauline leaves on the culm; basal leaves linear, closely ribbed, rigidly ciliate on the margins; blade of cauline leaves similar but somewhat larger; sheath about half the length of the internode, closely ribbed, glabrous; ligule a fringe of hairs; inflorescence a narrow spike-like panicle.

An African genus of 1—2 species, both of which occur in South West Africa. (Type: *M. luderitzianum* Hack.)

148 36. *PEROTIS* Aiton, Hort. Kew., vol. 1, p. 85 (1789)

Spikelets solitary, sessile or subsessile, very small, falling entire. *Flower* 1. *Glumes* equal and similar, linear or linear-lanceolate, 1-nerved, finally scabrid, membranous, each passing into a capillary awn; awn 3—5 times as long as the glumes. *Valve* much shorter than the glumes, lanceolate, acute, 1-nerved, hyaline, subtending a pale and a bisexual flower. *Pale* very minute, hyaline, nerveless. *Lodicules* 2, broad, cuneate. *Stamens* 3. *Ovary* more or less ellipsoid; styles short, united at the very base, plumose above, laterally exserted. *Grain* cylindric, exserted from the unchanged valve and pale and enclosed with them in the glumes; embryo about $\frac{1}{3}$ as long as the grain.

Annuals; culm smooth or striate, glabrous; leaf-sheath as long as or shorter than the internode of the culm, finely ribbed, glabrous; ligule a very short and delicate hyaline rim; blade lanceolate-linear, flat, acute, finely and closely veined, without a distinct midrib, usually clasping the culm, ciliate with cartilaginous hairs, glabrous; inflorescence a cylindric solitary terminal spike appearing plumose due to the long capillary awns.

Species 4 or 5, natives of the tropics and subtropics of the Old World; 3 species in South Africa, recorded from South West Africa, the Transvaal, Swaziland, and Natal. (Type: *P. latifolia* Ait.)

153 37. ARUNDINELLA Raddi, Agrost. Bras., p. 36, pl. 1, f. 3 (1823)

Spikelets solitary on very short peduncles or 2-nate and unequally peduncled, when 2-nate then both spikelets alike or the shorter peduncled one barren and consisting of a scabrid glume. *Flowers* usually 2; the upper bisexual; the lower, when present, male or rarely bisexual. *Glumes* persistent, membranous; lower ovate, acuminate, acute, 3—6 nerved, somewhat keeled and scabrid on the keel; upper similar to the lower. *Valves* 2; lower boat-shaped, falcate, obtuse, 3—7-nerved, membranous, subtending a pale and a male (rarely bisexual) flower, sometimes flower absent; upper entire or minutely bifid, 3—7-nerved, minutely scaberulous, with the lobes sometimes produced into fine bristles about twice as long as the valve. *Pales* linear, 2-keeled, with the flaps more or less auricled. *Lodicules* 2, cuneate, rather fleshy. *Stamens* 3. *Ovary* oblong in outline; styles distinct or connate at the base, plumose above, laterally exserted. *Grain* oblong in outline.

Perennials; culm finely ribbed, glabrous; leaf-sheath as long as or shorter than the internodes of the culm, ribbed, glabrous; ligule extremely short, ciliate; blade linear, produced into a long fine point, with a distinct or prominent midrib and close but distinct lateral veins, sometimes scabrid, otherwise glabrous.

Species about 35—40, mainly in tropical and subtropical Asia and America; 2 species in Africa and Australia and 1 in Madagascar; 2 species in South Africa, extending from the Transvaal, Zululand, and Natal, through the coastal area to the George district; also recorded from the Queenstown district. (Type: *A. brasiliensis* Raddi=*A. hispidula* (Willd.) O. Kuntze)

154 38. MELINIS Beauv., Ess. Agrost., p. 54, pl. 11, f. 4 (1812)

Spikelets solitary, peduncled, falling entire. *Flower* 1. *Lower glume* reduced to a minute scale; upper oblong-elliptic, truncate, shortly 2-lobed, mucronate or shortly awned from the sinus, prominently 7-nerved, with the nerves not anatomizing, glabrous or pilose above. *Valves* 2; lower elliptic, 2-lobed, 5-nerved, empty, awned from the sinus; awn 3 times as long as the valve; upper ovate, obtuse, minutely 2-lobed, obscurely 3—1-nerved, membranous, shining, subtending a pale and the bisexual flower. *Pale* similar to its valve. *Lodicules* 3, very delicate. *Stamens* 3. *Ovary* ellipsoid; style free, plumose above, laterally exserted. *Grain* terete, linear-ovate in outline; embryo about $\frac{1}{2}$ as long as the grain.

Perennials or annuals; culm smooth or faintly ribbed; leaf-sheath longer or shorter than the internode of the culm, ribbed, pilose with bulbous-based hairs; ligule ciliate; blade flat, usually linear-lanceolate, tapering to a fine point, distinctly ribbed, with a more distinct midrib, sometimes subcrenulate on the margins, pilose with bulbous-based hairs; inflorescence a contracted and narrow or open and spreading panicle; ultimate branches of main rachis more or less capillary; peduncle of spikelet capillary.

An African genus of 16 species, with 1 species in South America; 5 species in South Africa, recorded from the Transvaal and Natal. (Type: *M. minutiflora* Beauv.)

161. 39. PASPALUM Linn. Syst. Nat., ed. 10, 2, p. 855 (1759)

Spikelets solitary or paired, subsessile or unequally peduncled, second and abaxial, orbicular to oblong, usually most decidedly plano-convex, falling entire. *Flower* 1. *Lower glume* typically suppressed, very rarely represented by a small scale; upper conforming to the general shape of the spikelet, 3-nerved, with the nerves curved, glabrous or softly pilose. *Valves* 2; lower equal and similar to the glume, empty; upper chartaceous to crustaceous, obtuse, emucronate, faintly nerved, sometimes with inflexed margins, sometimes minutely punctiform, faintly nerved, glabrous, subtending a pale and

the bisexual flower. *Pale* similar to its valve and tightly embraced by it, with the margins inflexed as 2 ears. *Lodicules* 2, cuneate. *Ovary* ellipsoid; styles distinct or connate at the base, plumose above, exerted near the tip of the spikelet. *Grain* tightly enclosed by the slightly hardened valve and pale, more or less biconvex; scutellum orbicular-elliptic, shorter than $\frac{1}{2}$ the length of the grain.

Perennials; culm smooth or ribbed, glabrous; leaf-sheath longer than the internode of the culm, closely ribbed, sometimes long-pilose at the junction with the blade, otherwise glabrous; ligule long, membranous; blade long-linear, flat, rarely convolute, with a distinct midrib and distant but distinct, rarely obscure, lateral veins, glabrous; inflorescence spike-like and solitary at the end of the culm or consisting of a pair of terminal spikes or spike-like racemes or of spike-like racemes arranged up a main rachis; rachis flat on the back, with a raised midrib on the face, bearing the spikelets alternately on either side of the midrib, glabrous.

Species over 200, mainly in tropical America, with a few in the Old World; 6 species in South Africa, probably introduced, fairly widely distributed. (Type: *P. dimidiatum* L.)

161a 40. PASPALIDIUM Stapf, Fl. Trop. Afr., vol. 9, p. 582 (1920)

Spikelet solitary, sessile, falling entire. *Flowers* 2. *Lower glume* very much shorter than the spikelet, transversely oblong, hyaline; upper glume resembling the lower. *Valves* 2; lower more or less ovate-elliptic, rounded on the back, deeply concave, subacute, 5-nerved, membranous, 5-nerved, subtending a pale and a male flower. *Pale* elliptic-lanceolate, flat and 2 keeled on the back, with the margins inturned. *Lodicules* 2, broadly cuneate, fleshy. *Stamens* 3. *Upper valve* broadly elliptic, rounded on the back, deeply concave, with inturned margins and 2 flaps at the base, scabrid on the back. *Lodicules* 2, cuneate. *Stamens* 3. *Ovary* ellipsoid; styles connate at the base, plumose above, exerted from the tip of the spikelet. *Grain* tightly enclosed by the more or less hardened valve and pale.

Semi-aquatic or terrestrial perennials; leaf-sheath longer than the internodes of the culm, striate, glabrous; ligule a ciliated rim; blades linear, obtuse and minutely notched at the apex, with a distinct midrib, distinctly nerved, glabrous; inflorescence spike-like, consisting of spikes on a central flattened rachis; rachis of spikes flat on the back, with a much raised zigzag keel on the face; spikelets arranged alternately on either side of the keel, sometimes short secondary spikes on the rachis.

Species about 13, natives of the warm countries of both hemispheres, but mostly in the Old World; 6 species confined to Australia and New Caledonia; 1 species in South Africa, recorded from the Waterberg district of the Transvaal. (Type: *P. geminatum* (Forsk.) Stapf)

164 41. ERIOCHLOA H. B. & K., Nov. Gen. & Sp., vol. 1, p. 94, pp. 30, 31 (1816)

Spikelets 2-nate or solitary, peduncled, falling entire. *Flowers* 1—2. *Glumes* very unequal; lower reduced to a small nerveless scale clasping the base of the spikelet to a minute cupular rim clasping the callously thickened bead-like lower internode; upper as long as the valves, ovate-elliptic, mucronate, sometimes shortly awned, faintly 3—5-nerved, glabrous or pilose. *Valves* 2; lower similar in shape and texture to the upper glume, empty or subtending a pale and a male flower. *Pale*, when present, usually similar to its valve. *Upper valve* elliptic, with inflexed margins, abruptly mucronate, finely rugose, glabrous, subtending a pale and bisexual flower. *Pale* similar in texture to its valve, elliptic, obtuse, with inflexed margins. *Lodicules* 2, broadly cuneate, sometimes quite suppressed. *Stamens* 3. *Styles* distinct or united at the base, plumose above, laterally exerted near the tip of the

spikelet. *Grain* enclosed by the upper valve and pale, falling with them and the tightly appressed lower valve and upper glume.

Perennials or annuals; culm strongly ribbed or striate, glabrous; leaf-sheath as long as or shorter than the internode of the culm, ribbed, glabrous; ligule a ciliated rim; blade linear, flat, with distinct lateral veins, with or without a distinct midrib; inflorescence of narrow racemes arranged up the main rhachis; main rhachis angled, grooved; racemes more or less erect, with the rhachis flat on the back and with a raised keel on the face.

Species about 25, found in the warm parts of both hemispheres; 4 species in South Africa, recorded from the Transvaal, the Orange Free State, and Natal. (Type: *E. distachya* H. B. & K.)

164a

42. **PSEUDECHINOLAENA** Stapf, in Fl. Trop. Afr., vol. 9, p. 494 (1919)

Spikelets 2-nate or solitary, unequally peduncled, falling entire. *Shortly peduncled spikelet*:—*Flower* 1. *Lower glume* deeply boat-shaped, narrowly keeled on the back, subacuminate, acute, 3-nerved; upper lanceolate, boat-shaped, rounded on the back, deeply concave, with translucent patches, 7-nerved, glabrous. *Valves* 2; lower lanceolate, rounded on the back, deeply concave, subtending a pale and 3 staminodes. *Pale* lanceolate-linear, with inturned margins, as long as the valve. *Upper valve* elliptic, rounded on the back, deeply concave, faintly 2-keeled, with the margins infolded. *Lodicules* 2, cuneate, hyaline. *Stamens* 2. *Ovary* ellipsoid; styles free, plumose above, exerted from the apex of the spikelet. *Long peduncled spikelet*:—*Flower* 1. *Lower glume* lanceolate, rounded on the back, deeply concave, shortly mucronate, 5-nerved; upper glume boat-shaped, deeply concave, with semi-translucent patches on the back, and often with hooked spines from the patches. *Valves* 2; lower ovate-lanceolate, rounded on the back, deeply concave, minutely 3-lobed, 5-nerved, subtending a pale and a male flower. *Pale* lanceolate, with inturned margins. *Upper valve* boat-shaped, subacute, 3-nerved, stiffly chartaceous, subtending a pale and a bisexual flower. *Pale* somewhat similar to its valve. *Lodicules* 2, hyaline. *Stamens* 3. *Ovary* ellipsoid; styles plumose above, subterminally exerted. *Grain* oblong in outline; embryo almost $\frac{1}{2}$ the length of the grain.

Annual; culm very slender, prostrate and rooting at the nodes, finely ribbed, glabrous; leaf-sheath much shorter than the internode of the culm, finely striate, glabrous; ligule membranous; blade lanceolate, acute, finely ribbed, glabrous or with a few scattered hairs; inflorescence a lax panicle.

Species 1, found in the tropics of both hemispheres; recorded in South Africa from Zululand, Natal, and Pondoland. (Type: *P. polystachya* (H. B. & K.) Stapf)

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43. **PANICUM** Linn., Sp. Pl., ed. 1, p. 55 (1753)

Spikelets usually solitary, more rarely 2-nate, and unequally peduncled, lanceolate, oblong, elliptic, or orbicular in outline, symmetric in profile, rarely somewhat oblique, falling entire or almost so, 1-flowered, rarely 2-flowered. *Glumes* unequal, more rarely equal, herbaceous-membranous; lower elliptic or broadly ovate, obtuse, very rarely 3—5-fid, sometimes small and hyaline; upper as long as the valves, elliptic, ovate, or lanceolate, acute or obtuse, more rarely 3—4-fid or -toothed, rounded on the back, distinctly 5—9-nerved. *Valves* 2; lower very similar to the upper glume, subtending a pale and rarely also a male flower. *Pale* somewhat thinner in texture than the valve, equalling it in length. *Upper valve* elliptic, ovate-elliptic or rarely oblong, obtuse or subacute, deeply concave, usually with inflexed margins, smooth or rugose, varying from membranous to sub-

crustaceous, glabrous, subtending a pale and a bisexual flower. *Pale* similar to and subequalling its valve, often with marginal flaps at the base. *Lodicules* 2, broadly cuneate. *Stamens* 3. *Ovary* ellipsoid; styles distinct, plumose above, laterally exserted. *Grain* tightly enclosed by the hardened valve and pale; embryo about $\frac{1}{2}$ as long as the grain.

Annuals or perennials; culm very slender or somewhat robust, finely ribbed or smooth, sometimes channelled down one side, glabrous or pubescent, sometimes villous at the nodes; leaf-sheath shorter than the internode of the culm, ribbed, glabrous, pubescent or pilose from tubercled-based hairs; ligule various, sometimes a minute line of hairs and almost obsolete, sometimes a dense fringe of hairs, or membranous and long-ciliate, or more rarely hyaline and finely ciliate; blade linear-lanceolate or long-linear, with a distinct or prominent midrib or the midrib not differentiated, with the side nerves distinct but sometimes distant, or closely ribbed, usually flat, more rarely longitudinally folded, or convolute and more or less terete; inflorescence a contracted or open panicle; main rhachis terete or angled; primary branches often whorled on the main rhachis, crowded or remote, linear and grooved, sometimes terete and ribbed or smooth, often almost capillary; ultimate branches terete, sometimes almost capillary, or linear, usually glabrous, sometimes pubescent, or with long club-shaped glandular hairs, or pilose with long scattered hairs.

Species about 400, in the tropical and subtropical regions of both hemispheres, few in the warm-temperate regions; 36 species in South Africa, widely spread, especially abundant in the Transvaal and Natal. (Type: *P. miliaceum* L.)

166a 44. ALLOTEROPSIS Presl, Rel. Haenk., p. 334, pl. 47 (1830)

(*Axonopus* (Beauv.) Hook. f. of the Flora Capensis)

Spikelets 2—3-nate or fascicled, equally or unequally peduncled, ovate, elliptic, or lanceolate-oblong in outline, acute, sometimes acuminate, slightly or conspicuously compressed from the back, mostly awned, falling entire from the peduncles. *Flowers* 2. *Glumes* unequal; lower ovate, acuminate, convex on the back, distinctly 3—5-nerved, sometimes produced into a short awn, pubescent; upper elliptic, sometimes with broad marginal wings, pungent-mucronate, distinctly 3—5-nerved, pilose or long-ciliate, equalling the valves. *Valves* 2; lower resembling the upper glume, ovate-elliptic or lanceolate, acute or truncate, convex on the back, 3—5-nerved, subtending a pale and a male flower. *Pale* 3—4 times as short as its valve, 2-lobed, with marginal flaps. *Upper valve* chartaceous to membranous, elliptic, convex on the back, long pungent-acuminate, sometimes almost awned, 5-nerved, subtending a pale and a bisexual flower. *Pale* as long as its valve, lanceolate, with 2 broad flaps at the base. *Lodicules* 2, broadly cuneate. *Stamens* 3. *Ovary* subglobose; styles distinct, plumose above, laterally exserted. *Grain* enclosed by the valve and pale, elliptic-oblong in outline; scutellum about $\frac{1}{2}$ the length of the grain.

Tufted perennials; culm striate or finely ribbed, glabrous or villous at the nodes; leaf-sheath as long as or shorter than the internode of the culm, ribbed, glabrous or villous with bulbous-based hairs; ligule a narrow membranous rim, sometimes ciliate; blade flat, linear, tapering to a fine point, distinctly or prominently ribbed, with or without a distinct midrib, glabrous or pilose with bulbous-based hairs; inflorescence of spike-like racemes arranged digitately or subdigitately at the end of the culm or on a main rhachis; rhachis flattened, ribbed, ciliate.

Species about 5, in the tropics and the warm temperate zone of the Old World; 1 species recorded from South Africa and found in the Transvaal, Swaziland, Zululand, Natal, through the coastal area to the Alexandria district, also recorded from the Queenstown district. (Type: *A. distachya* Presl)

NOTE.—The genus was amended by Hitchcock in the *Contributions of the U.S. National Herbarium*, vol. 12, p. 210.—E. P. P.

166b 45. UROCHLOA Beauv., Ess. Agrost., p. 52, pl. 11, f. 1 (1812)

Spikelets solitary, 2-nate, or in fascicles of 3—4, sessile, subsessile, or peduncled, secund and abaxial on the rhachis, falling entire from the peduncles; peduncles usually much reduced and disc-tipped or, if 2-nate, then the primary slightly longer. *Flowers* 1—2. *Glumes* similar and subequal or more often dissimilar and very unequal in length; lower a small nerveless hyaline scale, 3—5-nerved; upper equalling the valves, ovate, acuminate, rounded on the back, deeply concave, obtuse or acute, 5—7-nerved, pilose, pubescent, or glabrous. *Valves* 2, very dissimilar; lower very much like the upper glume and more or less equalling it, subtending a pale and sometimes a male flower. *Pale* subhyaline, equalling its valve. *Upper valve* broadly elliptic to suborbicular, abruptly mucronate, with inflexed margins, concave and rugose on the back, crustaceous, subtending a pale and a bisexual flower; mucro sometimes almost $\frac{1}{2}$ as long as the valve. *Pale* subsimilar to its valve but rounded at the apex, with 2 marginal flaps at the base. *Lodicules* 2, broadly cuneate. *Stamens* 3. *Ovary* subglobose; styles distinct, plumose above, laterally exserted. *Grain* tightly enclosed by the more or less hardened valve and pale; embryo $\frac{1}{2}$ — $\frac{3}{4}$ the length of the grain.

Annuals or perennials; culm ribbed, sometimes channelled down one side, glabrous or sometimes sparsely pilose, villous at the nodes; leaf-sheath ribbed, sometimes pilose with bulbous-based hairs; ligule ciliate; blade lanceolate to linear-lanceolate, finely veined, with or without a distinct midrib, often with undulated margins, often long-ciliate, scabrid, sparsely pilose with bulbous-based hairs; inflorescence of 3—12 spikes or spike-like racemes arranged alternately on the main rhachis; rhachis flattened on the back, with a raised narrow or broad keel on the inner face, minutely ciliate on the margins, usually with a few long hairs at the nodes.

Species about 18, natives of the warmer parts of the Old World; 7 species in South Africa, recorded from the Transvaal, Basutoland, the Orange Free State, and Griqualand East; also recorded from the Kimberley and Graaff Reinet districts. (Type: *U. panicoides* Beauv.)

166c 46. BRACHIARIA Griesbach in Ledeb. Fl. Ross., vol. 4, p. 469 (1853)

Spikelets solitary or 2-nate, more rarely in fascicles of 3 or more, peduncled, secund and abaxial, falling entire. *Flowers* 1—2. *Glumes* dissimilar and unequal in length, membranous; lower smaller than the upper, ovate-lanceolate to ovate-orbicular, rounded at the apex, 3—11-nerved, villous or glabrous; upper elliptic, usually shortly acuminate or with an acumen $\frac{1}{3}$ as long as the glume, rounded on the back, 5—7-nerved, densely villous or with a few scattered hairs or glabrous. *Valves* 2, very dissimilar. *Lower valve* resembling the upper glume, 5—7-nerved, subtending a pale and sometimes a male flower. *Pale* almost as long as its valve, membranous or hyaline. *Upper valve* ovate-elliptic, obtuse, acute or subacute, sometimes shortly acuminate and sometimes minutely rugose on the back, faintly 5-nerved, subtending a pale and a bisexual flower. *Pale* similar to and embraced by its valve, with 2 marginal flaps at the base. *Lodicules* 2, broadly cuneate. *Ovary* subovoid; styles distinct, plumose above, laterally exserted from the upper part of the spikelet. *Grain* tightly enclosed by the more or less hardened valve and pale, broadly oblong or elliptic in outline; embryo $\frac{1}{2}$ to over $\frac{3}{4}$ as long as the grain.

Perennials or annuals; culm ribbed, sparsely pubescent or finely villous, usually villous at the nodes; leaf-sheath longer or shorter than the internode of the culm, prominently ribbed, sparsely covered with tubercled-based hairs, sometimes almost villous; ligule long-ciliate; blade flat, lanceolate or linear-lanceolate, or long-linear and tapering to a fine point, closely veined, with a distinct midrib and sometimes with

distinct lateral veins, with often undulating margins or margins sometimes cartilaginous, sometimes toothed, often scabrid to the touch, hispid or finely villous or covered with tubercle-based hairs; inflorescence of spike-like racemes arranged on a main rachis; rachis semi-terete and pilose with scattered hairs, or rounded on the back and concave on the face and with ciliate margins.

Species about 80, mostly African, but some found in the warm regions of both hemispheres; 15 species in South Africa, recorded from the Transvaal, Swaziland, Basutoland, Natal, the Orange Free State, through the coastal area to the Riversdale district; also recorded from South West Africa and some of the north-western districts of the Cape Province. (Type: *B. erucaeformis* Griseb.)

166d

47. *ECHINOCHLOA* Beauv., Ess. Agrost., p. 53, pl. 11, f. 2 (1812)

Spikelets solitary or 2-nate, more rarely 3-nate, sessile, subsessile, or peduncled, falling entire. *Flowers* 1—2. *Glumes* unequal, herbaceous; lower usually less than $\frac{1}{2}$ as long as the upper, ovate from a clasping base, subacute, sometimes shortly acuminate, often distinctly 3—5-nerved; upper ovate, subacute, sometimes acuminate, convex on the back, 3—7-nerved, pubescent or hispid. *Valves* 2, dissimilar; lower similar to the upper glume, sometimes awned, subtending a pale and occasionally also a male flower; awn, when present, as long as or 3 times as long as the valve. *Pale* hyaline, subequalling its valve. *Upper valve* ovate to lanceolate-ovate, acute, subacute, sometimes shortly acuminate, convex, smooth and polished on the back, chartaceous to crustaceous, subtending a pale and a bisexual flower. *Pale* similar to its valve, with infolded margins. *Lodicules* 2, cuneate, fleshy. *Stamens* 3. *Styles* distinct, plumose above, exerted from near the tip of the spikelet. *Grain* broadly elliptic in outline; embryo more than $\frac{1}{2}$ as long as the grain.

Annuals or perennials; culm sometimes stout, ribbed or smooth, glabrous; leaf-sheath equalling or shorter than the internode of the culm, ribbed, glabrous; ligule 0 or represented by a fringe of hairs; blade linear or long-lanceolate, flat or more rarely folded, finely and closely veined, with a distinct midrib; inflorescence of spikes or spike-like subracemes arranged on a main rachis; rachis simple, more rarely branched, flattened or rounded on the back, with a narrow raised keel on the inner face, with bristle-like hairs from the nodes.

Species about 20—25, natives of the warm regions of both hemispheres; 6 species in South Africa, extending from the Transvaal, Natal, Basutoland, the Orange Free State, through the coastal area to the Cape; also from South West Africa to some of the north-western districts. (Type: *E. crus-galli* (L.) Beauv.)

166e

48. *SACCIOLEPIS* Nash ex Britton, Man., p. 89 (1901)

(*Rampnolepis* Stapf in key only)

Spikelets solitary, peduncled, usually more or less oblique at the base, falling entire; peduncle short, finely filiform. *Flowers* 1—2. *Glumes* very unequal; lower reduced to a minute hyaline scale; upper curved or basally gibbous or saccate on the back, concave, usually 7—9-nerved, sometimes 5—13-nerved, with hyaline margins or tip. *Valves* 2, dissimilar; lower resembling the upper glume but with a straight back, subtending a pale and sometimes a male flower. *Pale* linear, hyaline. *Upper valve* oblong or elliptic, convex, chartaceous, becoming crustaceous, with firm narrowly involute margins, obscurely 5-nerved, subtending a pale and a bisexual flower. *Pale* more or less similar to its valve. *Lodicules* 2, broadly cuneate. *Stamens* 3. *Ovary* ellipsoid; styles distinct, plumose near the ends, exerted from the apex of the spikelet. *Grain* tightly enclosed by the somewhat hardened valve and pale, elliptic in outline.

Annuals or perennials; culm slender, ribbed, glabrous; leaf-sheath shorter than the internode of the culm, prominently ribbed, glabrous; ligule a very narrow minutely ciliate rim; inflorescence a narrow evident panicle.

Species over 30, in the tropics of both hemispheres; 4 species in South Africa, recorded from Natal. (Type: *S. gibba* Nash)

166f 49. DIGITARIA Heister ex Fabricus, Enum. Method. Pl., ed. 1, p. 207 (1759)

Spikelets solitary or usually 2—3-nate, more rarely 4—6-nate, second and abaxial, peduncled, with the peduncles usually unequal. *Flower* 1. *Glumes* very dissimilar; lower a minute membranous scale or a very delicate readily disintegrating hyaline membrane, sometimes quite suppressed; upper linear-oblong, linear-lanceolate, or lanceolate, obtuse or acute, sometimes ciliate, villous or pilose, very rarely reduced or only $\frac{1}{2}$ as long as the lower valve, usually 3-nerved and with the nerves more or less parallel, membranous. *Valves* 2, dissimilar; lower lanceolate and determining the outline and size of the spikelet, flat on the back, 5—7-nerved, very rarely 3-nerved, with the nerves parallel, sometimes ciliate, densely villous or pilose, rarely reduced to a small scale, subtending a minute pale; upper lanceolate, obtuse, sometimes shortly acuminate, with the margins inflexed, faintly 3-nerved, subtending a pale and a bisexual flower. *Pale* similar to its valve, often completely enclosed by it. *Lodicules* 2, broadly cuneate. *Stamens* 3. *Ovary* ovoid; styles distinct, plumose above, laterally exerted near the top of the spikelet. *Grain* tightly enclosed by the slightly hardened valve and pale; embryo usually $\frac{1}{2}$ as long as the grain.

Annuals or perennials, sometimes creeping and rooting at the nodes; culm smooth, glabrous; leaf-sheath longer or shorter than the internode of the culm, ribbed, softly villous or pilose with bulbous-based hairs or glabrous; ligule membranous, sometimes with hairs from the back; blade flat or rolled, mostly long-linear, very rarely lanceolate or linear-lanceolate, sometimes with cartilaginous and undulate margins, with or without a distinct midrib, with the lateral veins evident or not, sparsely pilose with bulbous-based hairs; inflorescence of narrow spike-like racemes, arranged digitately or subdigitately at the end of the culm, more rarely the racemes solitary; rhachis flattened, usually with a raised keel on the inner face and with the spikelets arranged on either side of the keel.

Species more than 325, natives of the warm regions of both hemispheres, most numerous in the Old World; 43 species in South Africa, widely spread, but particularly abundant in the Transvaal and Natal. (Type: *D. sanguinalis* (L.) Scopoli)

166g 50. MEGALOPROTACHNE Hubbard, Kew Bull., p. 320 (1929)

Spikelets solitary, sometimes 2—3 arising from the same node on the rhachis, unequally peduncled, falling entire from the peduncle; peduncle linear, saucer-shaped at the apex. *Flowers* 2. *Lower glume* lanceolate, somewhat convex on the back, obtuse, with inturned margins, 4—5-nerved, glabrous; upper lanceolate, 3-nerved, pilose, with a tuft of hairs at the base. *Valves* 2; lower elliptic, with inturned margins, 3—5-nerved, pilose, subtending a pale and a male flower. *Pale* elliptic-lanceolate, flat on the back, 2-keeled, with the margins much inturned. *Lodicules* 2, cuneate, fleshy. *Stamens* 3. *Upper valve* ovate-elliptic, shortly subacuminate, convex on the back, 3-nerved, subtending a pale and a bisexual flower. *Pale* elliptic, flat on the back, 2-keeled, with inturned margins. *Lodicules* 2, cuneate, hyaline. *Ovary* ellipsoid; styles free, plumose in the upper half, exerted from the apex of the spikelet. *Grain* elliptic in outline; embryo $\frac{1}{2}$ the length of the grain.

An annual; culm smooth, glabrous; leaf-sheath shorter than the internode, finely striate, villous at the base; ligule scarious, long-ciliate; blade linear, ribbed,

glabrous; inflorescence a more or less contracted panicle, rhachis of primary branches linear, convex on the back, concave on the face.

Endemic; species 1, recorded from British Bechuanaland and the Vryburg district. (Type: *M. albescent* Hubbard)

166h 51. LEUCOPHRYS Rendle, Cat. Afr. Pl. Welw., vol. 2, p. 193 (1899)

Spikelets solitary, 2-nate, or fascicled, more or less peduncled, falling entire. *Flowers* 2. *Lower glume* lanceolate, shortly or long acuminate, obtuse or acute, 1—5-nerved, membranous, pilose or pubescent or glabrous; upper ovate-lanceolate, shortly or long acuminate, 5—7-nerved, long-villous. *Valves* 2, very dissimilar; lower equalling the upper glume, hairy, subtending a pale and a male flower. *Pale* equalling its valve or shorter, 2-keeled, hyaline. *Lodicules* 2, cuneate, fleshy; upper valve about $\frac{1}{2}$ as long as the lower, elliptic, obtuse, smooth, chartaceous or crustaceous, faintly 5-nerved, glabrous, subtending a pale and a bisexual flower. *Pale* equalling its valve. *Lodicules* 2, cuneate, fleshy. *Stamens* 3. *Ovary* ellipsoid; styles free, plumose in the upper half, exserted subterminally.

Perennials or annuals; culm ribbed or striate, pubescent or glabrous; leaf-sheath longer or shorter than the internode of the culm, ribbed, pilose; ligule ciliated or 0; blade linear, flat or longitudinally folded, with indistinct nerves, densely and softly hairy; inflorescence a contracted panicle or of short spike-like racemes on the primary axis and distant from one another.

Species 2, recorded from the Gordonia, Kuruman, Kenhardt, and Bloemfontein districts. (Type: *L. mesocoma* (Nees) Rendle)

166i 52. TARIGIDIA Stent, Kew Bull., p. 151 (1932)

Spikelets 2-nate, shortly and unequally peduncled, alike in sex and structure. *Flower* 1. *Lower glume* lanceolate, sometimes acuminate, 1-nerved, glabrous; upper glume ovate-lanceolate, obtuse, minutely ciliate near the tip, 5-nerved, long-pilose. *Valves* 2; lower valve lanceolate, rounded on the back, deeply concave, 7-nerved, long pilose, empty; upper valve lanceolate, flattish on the back, with inturned margins, 3-nerved, glabrous, subtended by a pale and a bisexual flower. *Pale* lanceolate, flat on the back, 2-keeled, with inturned margins, 2-nerved. *Lodicules* 2, small, hyaline. *Ovary* subglobose; styles united at the base, plumose on the uppermost $\frac{2}{3}$.

Perennial; culm smooth, glabrous; leaf-sheath strongly ribbed, scantily pilose, becoming more or less villous at the base; ligule large, hyaline; blade narrow-linear, with a distinct midrib and fine lateral ribs, glaucous; inflorescence of short racemes on a main rhachis closely packed so that the whole resembles a single spike.

Endemic; species 1, recorded from the Hoopstad, Kroonstad, and Vryburg districts. (Type: *T. aequiglumis* (Goossens) Stent)

166j 53. ORYZIDIUM Hubbard & Schweickerdt, Kew Bull., p. 326 (1936)

Spikelets solitary, peduncled; peduncle scabrid. *Flowers* 2. *Lower glume* reduced to a membranous scale; upper glume lanceolate, produced into an awn, 5—7-nerved, ciliate on the nerves, stiffly membranous; awn 3—4 times as long as the body of the glume, scabrid. *Valves* 2; lower valve lanceolate, acuminate, 5-nerved, membranous, glabrous, subtended by a pale and a male flower. *Pale* shorter than the valve, flat on the back, subhyaline. *Lodicules* 2, cuneate. *Upper valve* lanceolate, acute, 7-nerved, membranous, subtending a pale and a bisexual flower. *Pale* as long as the valve and similar

to it, flat on the back. *Lodicules* 2. *Ovary* ellipsoid, glabrous; style distinct. *Grain* oblong in outline; embryo about $\frac{1}{3}$ the length of the grain.

An aquatic (?) grass; leaf-blade linear, flat; ligule very short, ciliate; inflorescence a more or less contracted panicle.

An African genus of 1 species; in South Africa recorded from South West Africa. (Type: *O. barnardii* Hubb. & Schw.)

166k **54. STEREOCHLAENA** Hack., Proc. Rhodesia Sc. Assoc., vol. 7, p. 65 (1908)

Spikelets 2-nate, unequally peduncled, similar; peduncle scabrid. *Flower* 1. *Lower glume* absent; upper glume reduced to an ovate hyaline scale. *Valves* 2; lower valve lanceolate, 5-nerved, scabrid on the nerves, finely awned, stiffly herbaceous, without a flower; awns 5 times as long as the body of the valve. *Pale* represented by 2 scales. *Upper valve* as long as the lower, lanceolate, acute, 3-nerved, rounded on the back, membranous, glabrous, subtending a pale and a bisexual flower. *Pale* as long as the valve and similar to it. *Lodicules* 0. *Ovary* ovoid or ellipsoid; styles distinct, terminally exerted. *Grain* not seen.

Perennial; culm striate, glabrous; leaf-sheath shorter than the internode of the culm, closely ribbed, pilose; ligule ciliate; blade flat, narrow-linear, closely ribbed, with a distinct midrib, pilose; inflorescence of spike-like racemes arranged digitately at the end of the culm; rhachis flat on the back, keeled on the face, long-ciliate; pairs of spikelets 2-ranked.

An African genus of 1 species; in South Africa recorded from Bechuanaland and the northern Transvaal. (Type: *S. cameronii* (Stapf) Pilger)

166l **55. ACROCERAS** Stapf, Fl. Trop. Afr., vol. 9, p. 621 (1920)

Spikelets usually 2-nate or the upper spikelets on the raceme solitary, rarely fascicled, falling entire. *Flowers* 2. *Glumes* subsimilar, unequal, membranous; lower glume lanceolate, laterally compressed at the apex, 3-nerved, glabrous; upper glume similar to the lower but longer and 5-nerved. *Valves* 2, dissimilar; lower valve similar to the upper glume, subtending a pale and a male flower. *Pale* hyaline. *Upper valve* lanceolate, laterally compressed at the apex, crustaceous, glabrous, subtending a pale and a bisexual flower. *Pale* similar to the valve. *Lodicules* 2, cuneate, fleshy. *Stamens* 3. *Ovary* ellipsoid; styles distinct, plumose above. *Grain* tightly enclosed by the hardened valve and pale, oblong in outline; embryo short.

Perennials, erect from a creeping base; culm striate, glabrous; leaf-sheath shorter than the internode of the culm, ribbed, ciliate on the infolded margins; ligule ciliate; blade flat, linear, tapering upwards, finely and closely veined, with the midrib hardly distinct, smooth, glabrous; inflorescence a panicle with the spikelets distant on the rhachis.

An African genus of a few species; 2 species in South Africa, recorded from Bechuanaland, the Transvaal, Zululand, Natal, and from the Cape Peninsula (introduced). (Type: *A. oryzoides* (Sw.) Stapf)

168 **56. TRICHOLAENA** Schrad., in Roem. & Schult. Syst. Veg., vol. 2, Mant. p. 163 (1824)
(*Xyochlaena* Stapf)

Spikelets solitary, peduncled, falling entire; peduncle capillary. *Flowers* sometimes 2. *Glumes* very unequal; lower glume reduced to a hyaline villous scale or obsolete; upper glume ovate, subobtus, sometimes acuminate and acute, not gibbous at the base, 5-nerved, glabrous or villous. *Valves* 2; lower valve resembling the upper glume, subtending a pale and

usually a male flower. *Pale* subequalling its valve, hyaline. *Upper valve* lanceolate or ovate, acute or obtuse, 5-nerved, membranous or chartaceous, shining, glabrous, subtending a pale and a bisexual flower. *Pale* more or less similar to its valve, 2-nerved. *Lodicules* 2. *Stamens* 2. *Ovary* ellipsoid; styles free or connate at the base, plumose above, exserted near the apex. *Grain* ovate- or elliptic-oblong in outline, tightly enclosed by the valve and pale; embryo $\frac{1}{2}$ the length of the grain.

Perennials, rarely annuals; culm striate, glabrous; leaf-sheath longer or slightly shorter than the internode of the culm, ribbed, glabrous; ligule ciliate; blade flat, rolled or folded, ribbed, with a distinct midrib; inflorescence an open panicle; rhachis terete, glabrous.

Species 8, natives of Africa, the Canary Islands, Sicily, and south-west Asia; 4 species in South Africa, recorded from South West Africa, the Transvaal, and the Vryburg, Prieska, and Hay districts. (Type: *T. teneriffae* (L.) Parl.)

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57. **RHYNCHELYTRUM** Nees in Lindl., Nat. Syst., ed. 2, p. 446 (1836)

(*Tricholaena* Schrad. of the Fl. Cap.)

Spikelets solitary, peduncled, falling entire, often completely enveloped by long shining hairs; peduncles capillary or sometimes narrow-linear, with thickened tips. *Flowers* 1—2. *Glumes* very dissimilar or at least unequal; lower glume reduced to a minute scale or obsolete, sometimes remote from the upper glume and 5- (rarely 7-) nerved; upper glume more or less dorsally gibbous and laterally compressed, sometimes evenly curved to almost straight on the keel, ovate, oblong-ovate, or lanceolate, 2-toothed, sometimes mucronate or shortly awned from the sinus, 5-nerved, hairy with long silky hairs, 5-nerved; awn, when present, two-thirds as long as the glume. *Valves* 2; lower valve more or less like the upper glume, subtending a pale and sometimes also a male flower. *Pale* subequalling its valve, dissimilar or more or less similar to it, 2-nerved, hyaline. *Upper valve* ovate-oblong, obtuse or acute, more rarely truncate and minutely notched, chartaceous, subtending a pale and a bisexual flower. *Pale* similar to its valve, 2-nerved, chartaceous. *Lodicules* 2. *Stamens* 3. *Ovary* ellipsoid; styles free, plumose, laterally exserted. *Grain* closely embraced by the valve and pale; embryo about $\frac{1}{2}$ the length of the grain.

Perennials or annuals; culm striate, pilose with bulbous-based hairs or glabrous, sometimes villous at the nodes; leaf-sheath shorter than the internode of the culm, ribbed, pilose with bulbous-based hairs; ligule ciliate; blade flat or rolled, sometimes setaceous, usually narrow-linear, more rarely linear-lanceolate, distinctly or indistinctly veined, pilose or glabrous; inflorescence a lax or more or less contracted panicle; rhachis linear, pilose.

Species 34, chiefly in tropical and South Africa and Madagascar; one species extending into Arabia and India and another occurring in Indo-China; 9 species in South Africa, extending from the Transvaal, Swaziland, Zululand, Natal, Basutoland, the Orange Free State to the Mossel Bay district; also recorded from South West Africa, some of the north-western districts of the Cape Province, and from the Graaff Reinet district. (Type: *R. dregeanum* Nees=*R. repens* (Willd.) Hubb.)

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58. **OPLISMENUS** P. Beauv., Fl. Owar., vol. 2, p. 14, pl. 68, f. 1 (1809)

Spikelets solitary, 2-nate, or in small clusters, peduncled, secund and abaxial, falling entire. *Flower* usually 1, sometimes 2. *Glumes* equal, elliptic, 3—5-nerved, awned, membranous, sometimes ciliate, glabrous; awn of the lower glume 2—4 times as long as the glume. *Valve* 2, dissimilar; lower valve exceeding the glumes and resembling them, 5—9-nerved, muticous

or mucronate or very shortly awned, empty or sometimes subtending a pale and sometimes also a male flower. *Pale*, when present, subequal to its valve, 2-nerved. *Upper valve* lanceolate, shortly apiculate or obtuse, chartaceous, subtending a pale and a bisexual flower. *Pale* very similar to its valve. *Lodicules* 2, broadly cuneate, often very delicate. *Stamens* 3. *Ovary* ellipsoid; styles distinct, long, plumose, terminally or subterminally exserted. *Grain* oblong in outline, tightly enclosed by the somewhat hardened valve and pale; hium $\frac{3}{4}$ — $\frac{1}{2}$ the length of the grain.

Annuals or more usually perennials, sometimes with a creeping base and rooting at the nodes; culm slender, striate, hairy or glabrous; leaf-sheath longer or shorter than the internode of the culm, ribbed, ciliate on the margins and at the junction with the blade, glabrous; ligule very short, membranous; blade lanceolate, acute, sometimes acuminate, with a distinct midrib and evident lateral ribs, scabrid, glabrous; inflorescence subspicate, with distant spikelets and/or with the spikelets on very short distant branches of the main rhachis; primary branches, when present, sharply 3-angled, scantily pilose.

Species about 15, natives of the warmer parts of the world but mostly tropical; 1 species in South Africa, recorded from the Transvaal, Zululand, and Natal, through the coastal area to the Swellendam district; also recorded from the Albany and Somerset East districts. (Type: *O. africanus* Beauv.)

171 59. SETARIA Beauv., Ess. Agrost., p. 51, pl. 13, f. 3 (1812)

Spikelets solitary or clustered, subsessile, falling entire, subtended by 1 or more persistent bristles, more rarely some spikelets without bristles. *Bristles* shorter than the spikelet or up to 4 times as long, smooth or scabrid. *Flowers* 1—2. *Glumes* unequal or almost equal, membranous; lower generally much smaller than the upper, ovate from a clasping base, usually 3—5- (rarely 1- or 7-) nerved; upper usually 3—9-nerved. *Valves* 2, dissimilar; lower more or less exceeding and resembling the upper glume, empty or subtending a pale and sometimes also a male flower. *Upper valve* elliptic, deeply concave, subacute, transversely rugose or pitted, 5-nerved, chartaceous to coriaceous, subtending a pale and a bisexual flower. *Pale* similar to its valve and equalling it. *Lodicules* 2, broadly cuneate. *Stamens* 3. *Ovary* ellipsoid; styles distinct, plumose above, laterally exserted. *Grain* oblong or elliptic in outline, tightly enclosed by the hardened valve and pale; embryo about $\frac{1}{2}$ as long as the grain.

Perennials or annuals, sometimes stoloniferous; culm smooth or ribbed, sometimes channelled down one side, glabrous; leaf-sheath longer or shorter than the internode of the culm, ribbed, with membranous margins, sometimes ciliate, glabrous, more rarely pilose; ligule ciliate; blade usually flat and narrow-linear, sometimes rolled or longitudinally folded, closely veined, with a prominent or distinct midrib, smooth or scabrid, glabrous; inflorescence either a cylindric spike-like panicle, an open panicle, more rarely subspicate; rhachis of open inflorescence angled, minutely pubescent; main rhachis of spike-like inflorescence sometimes villous; bristles golden, tawny, or dark purple in colour.

Species about 100, natives of all warm countries, a few found as weeds in the more temperate parts; 28 species in South Africa, widely distributed. (Type: *S. viridis* (L.) Beauv.)

171a 60. CYMBOSETARIA Schweickerdt in Hook. Ic. Pl., t. 3320 (1936)

Spikelets solitary, very shortly peduncled, subtended by a bristle, falling entire; peduncle saucer-shaped at the apex. *Flowers* 2. *Glumes* unequal, membranous, glabrous; lower smaller than the upper, ovate, 3-nerved; upper ovate, rounded and somewhat keeled on the back, deeply concave, shortly mucronate, 5-nerved. *Valves* 2; lower elliptic, flat on the back,

concave, with inturned margins, shortly mucronate, 5-nerved, membranous, glabrous, subtending a pale and a male flower. *Pale* elliptic, flat on the back, 2-keeled, with inturned margins, 2-nerved. *Lodicules* 2, minute. *Stamens* 3. *Upper valve* ovate, rounded and somewhat keeled on the back, transversely rugose, deeply concave, with a short blunt mucro, 3-nerved, subtending a pale and a bisexual flower. *Pale* ovate, flat on the back, 2-keeled, with the margins infolded, 2-nerved. *Lodicules* 2, cuneate. *Stamens* 3. *Ovary* ovoid; styles distinct, plumose above. *Grain* ovate in outline, concave on the face, convex on the back; embryo about $\frac{1}{2}$ as long as the grain.

An annual; culm finely striate, glabrous; leaf-sheaths shorter than the internodes of the culm, ribbed, ciliate, glabrous; ligule membranous; blade broadly linear, acuminate, with a distinct midrib, strongly sagittate at the base, seated on a pseudo-petiole, glabrous; inflorescence of spike-like racemes arranged singly or in whorls on a central axis; rhachis of racemes 3-angled, pubescent; bristles pale, longer than the spikes, scabrid.

Species 1, found in southern Arabia, tropical Africa, and recorded in South Africa from the Zoutpansberg district of the Transvaal, Swaziland, and South West Africa. (Type: *C. sagittifolia* (A. Rich.) Schweickherdt)

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61. CENCHRUS Linn., Sp. Pl., ed. 1, p. 1049 (1753)

Spikelets 1—5, enclosed in a spiny involucre and falling entire with the involucre; involucre peduncled, of several hardened connate spinous bracts which appear as two single bracts covered with hard spines. *Flowers* 1—2. *Glumes* unequal, usually small and hyaline or membranous; lower sometimes suppressed; upper ovate, acuminate, obtuse, rarely $\frac{1}{2}$ the length of the spikelet, if longer, then up to 7-nerved. *Valves* 2; lower ovate-lanceolate, acuminate, empty or subtending a pale and a male flower. *Upper valve* ovate-acuminate, subacute, with widely inflexed margins, 5—7-nerved, membranous to chartaceous, subtending a pale and a bisexual flower. *Pale* similar to its valve. *Lodicules* 0. *Stamens* 3. *Ovary* ovoid; style distinct or connate at the base, plumose above. *Grain* elliptic, obovate or oblong in outline; embryo $\frac{3}{8}$ as long as the grain.

Annuals or perennials; culm finely striate, glabrous; leaf-sheath shorter than the internode of the culm, ribbed, pilose at the junction with the blade, otherwise glabrous; ligule ciliate; blade flat or longitudinally folded, closely ribbed, with a distinct midrib, glabrous; inflorescence consisting of the involucre surrounding the spikelets arranged on a central axis.

Species 25—30, mainly in the warm dry regions of America and Africa, a few in India, south-west Asia to Australia and Polynesia; 3 species in South Africa, recorded from Griqualand West and the Hopetown, Bloemfontein and Ficksburg districts. (Type: *C. echinatus* L.)

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62. PENNISETUM L. Rich., in Pers. Syn. Pl., vol. I, p. 72 (1805)

Spikelets solitary or in clusters of 2—4, subtended by and deciduous with an involucre of bristles; bristles sessile or peduncled, simple, rarely branched, naked, scabrid, or plumose. *Flowers* 1—2. *Glumes* usually small and hyaline, unequal; lower glume usually suppressed; upper glume rarely $\frac{1}{2}$ the length of the spikelet, if longer, then up to 7-nerved. *Valves* 2; lower valve lanceolate or ovate-lanceolate, acuminate, acute, empty or subtending a pale and a male flower. *Pale* subequal to its valve, or more or less reduced, or absent. *Upper valve* resembling the lower, 5—7-nerved, membranous to chartaceous, subtending a pale and a bisexual flower. *Pale* subequal to its valve and of similar texture, 2-nerved. *Lodicules* small, usually in the front of and outside the pale or absent. *Stamens* 3, with the tips of the anthers

naked or minutely penicillate. *Ovary* ellipsoid; style free or connate below, *Grain* broadly oblong in outline, enclosed by the more or less hardened valve and pale; embryo $\frac{1}{2}$ — $\frac{3}{4}$ as long as the grain.

Annuals or perennials; culm striate, glabrous; leaf-sheath shorter than the internode of the culm, glabrous; ligule usually reduced to a ciliated rim or a fringe of hairs, rarely membranous; blade narrow-linear, flat or folded, closely veined, with a prominent midrib, scabrid, usually glabrous, more rarely with scattered bulbous-based hairs; inflorescence a solitary terminal cylindrical or more or less oblong subspike; main rachis straight or flexuous, furrowed.

Species about 120—130, natives of tropical and warm regions; 11 species in South Africa, widely distributed.

175a **63. BECKEROPSIS** Fig. et de Not., in Mem. Acc. Torino., vol. 14, p. 365 (1854)

(*Pennisetum* sect. *Beckeropsis* of the Fl. Cap.)

Spikelets solitary, subsessile, subtended by a single bristle, falling with the bristle; bristle about twice as long as the spikelet, scabrid. *Flower* 1. *Glumes* reduced to hyaline scales; upper glume somewhat larger than the lower. *Valves* 2; lower valve lanceolate, obtuse, flattish and scabrid on the back, 5-nerved, membranous, empty. *Upper valve* lanceolate, shortly acuminate, rounded on the back, 3-nerved, membranous, glabrous, subtending a pale and a bisexual flower. *Pale* subequalling the valve, lanceolate, obtuse, flat on the back, membranous. *Lodicules* 2, cuneate, somewhat fleshy. *Ovary* ellipsoid; styles distinct, plumose above, subterminally exserted. *Grain* oblong in outline, enclosed between the valve and pale; embryo $\frac{1}{2}$ the length of the grain.

Annuals or perennials; culm much branched, particularly from the upper nodes, smooth, glabrous; leaf-sheath shorter than the internode of the culm, ribbed, glabrous; ligule ciliate; blade flat, linear, ribbed, with a distinct midrib, glabrous; inflorescence of racemes, more or less fascicled from the upper nodes and forming a lax panicle.

An African genus of 5 species; 1 species in South Africa, recorded from the northern Transvaal and Natal. (Type: *B. nubica* Fig. et de Not.)

180 **64. STENOTAPHRUM** Trin., Fund. Agrost., p. 175 (1820)

Spikelets solitary or in fascicles of 2—5, subsessile or on short appressed branches, immersed in hollows on the rachis or very closely appressed to the upper side of the rachis, falling entire. *Flowers* 1—2. *Glumes* unequal; lower glume varying from very minute and scale-like to nearly $\frac{1}{2}$ the length of the spikelet, broadly truncate, obtuse, or emarginate, nerveless; upper glume oblong-obovate, subobtuse, very convex on the back, as long as or nearly as long as the spikelet, 5—9-nerved, glabrous. *Valves* 2, dissimilar, lanceolate or ovate-lanceolate, acute, glabrous; lower valve chartaceous to coriaceous, 3—9-nerved, subtending a pale and usually a male flower. *Pale* as long as its valve, membranous. *Upper valve* chartaceous to coriaceous, or membranous, subtending a pale and a bisexual flower. *Pale* equal to and tightly embraced by its valve, faintly 2-nerved. *Lodicules* 2, quadrate-cuneate. *Stamens* 3. *Ovary* ellipsoid; style free or almost so, plumose above, laterally exserted. *Grain* oblong in outline, plano-convex; embryo $\frac{1}{2}$ as long as the grain.

Creeping or prostrate perennials, rooting at the nodes, sometimes tufted annuals; culm erect, striate, glabrous; leaf-sheath shorter than the internode of the culm, longitudinally folded, closely ribbed, glabrous or pilose at the junction with the blade; ligule a fringe of short hairs; blade flat, linear, closely veined, with a distinct midrib, scabrid, glabrous; inflorescence spike-like, solitary and terminal

or lateral from the upper leaves; rhachis compressed, flat on the back, hollowed on the inner face; branches short, terminated by an oblique appendage.

Species 7, mainly on the shores of tropical and subtropical seas; 4 species confined to Madagascar and the neighbouring islands; 1 species in South Africa, extending from Natal along the coast to the Cape. (Type: *S. secundatum* (Walt.) O. Kuntze)

184 65. OLYRA Linn., Syst. Nat., ed. 10, vol. 2, p. 1261 (1759)

Spikelet solitary, peduncled, unisexual, both sexes usually on the same, rarely on different, inflorescences; male spikelet usually on the lower part of the inflorescence smaller than the female spikelets on the upper part of the inflorescence. *Male spikelet*:—*Flower* 1. *Glumes* absent or represented by an obscure ring. *Valve* lanceolate, awned, prominently keeled, 3-nerved, subhyaline, subtending a pale and the male flower. *Pale* equalling or shorter than its valve, 2-nerved. *Lodicules* 3, rarely 2. *Stamens* 3. *Ovary* 0. *Female spikelet*:—*Flower* 1. *Glumes* unequal or subequal, similar or dissimilar, ovate to lanceolate, acuminate, 3—9-nerved, transversely veined, papery or membranous, persistent; lower glume produced into an awn longer than the body of the glume. *Valve* ovate, elliptic, or lanceolate, convex on the back, obtuse, subtending a pale and a female flower. *Pale* similar to and embraced by the valve. *Lodicules* 3, truncate, cuneate. *Stamens* 0. *Ovary* more or less ellipsoid, acuminate; styles connate at the base or beyond the middle, plumose above, terminally exserted. *Grain* tightly enclosed in the hardened valve and pale.

Perennials; culm ribbed; leaf-sheath longer than the internode of the culm, ribbed, ciliate above, glabrous, more rarely sparsely pilose; ligule membranous; blade (in the South African species) ovate or ovate-lanceolate, long-acuminate, acute, contracted at the base into a short pseudo-petiole, with a distinct midrib and fine transverse veins, glabrous; inflorescence a lax panicle, either solitary or 2 from the upper leaf-sheath; rhachis more or less angled.

Species many, chiefly in tropical America; 1 species in South Africa, recorded from Zululand, Natal, and Pondoland. (Type: *O. latifolia* L.)

191 66. POTAMOPHILA R. Br., Prodr. Fl. Nov. Holl., p. 211 (1810)

Spikelets solitary, peduncled, falling entire; peduncle terete, widened into a membranous cap. *Flower* 1. *Glumes* very small, subulate or elliptic, rounded or lobed at the apex, hyaline, nerveless. *Valve* boat-shaped, subacute, prominently 3—5-nerved, sometimes almost winged, scabrid on the nerves, subtending a pale and a bisexual flower. *Pale* similar to its valve, 3-nerved. *Lodicules* 2. *Stamens* 6. *Ovary* ellipsoid; style distinct or connate at the base, plumose above, laterally exserted. *Grain* obovate in outline, crowned by the thickened base of the styles, free, enclosed by the unaltered valve and pale.

Perennials, tall and rather slender, found in forests and in damp or wet places; culm ribbed, glabrous; leaf-sheath as long as the internodes of the culm, ribbed, glabrous; ligule membranous; blade flat, broadly linear, with a distinct midrib and evident lateral veins, pubescent; inflorescence a lax panicle.

Species 3, found in Madagascar and Australia; 1 species in South Africa, extending from the Transvaal and Natal to the Kentani district. (Type: *P. parviflora* R. Br.)

193 67. ORYZA Linn., Sp. Pl., ed. 1, p. 333 (1753)

Spikelets solitary, peduncled, falling entire; peduncles linear, somewhat cup-shaped at the apex. *Flower* 1. *Glumes* equal, scale- or bristle-like, acuminate, sometimes suppressed. *Valve* boat-shaped, obtuse or acute,

awned or awnless, strongly 3-nerved rigidly ciliate, scabrid, rugose, chartaceous to almost crustaceous, subtending a pale and a bisexual flower; awn, when present, $1\frac{1}{2}$ — $2\frac{1}{2}$ times as long as the body of the valve, scabrid. *Pale* as long as the valve and similar in texture. *Lodicules* 2-lobed, rarely entire. *Stamens* 6. *Styles* short, free, plumose above, laterally exserted. *Grain* narrow, free or adnate to the valve and pale.

Annuals(?); culm striate, glabrous; leaf-sheath prominently ribbed, glabrous; ligule long, scarious; blade flat, long-linear, closely ribbed, glabrous; inflorescence a narrow panicle; primary branches of the inflorescence erect.

Species 6, natives of the tropics of both hemispheres; 1 species recorded from the Waterberg district of the Transvaal, probably introduced. (Type: *O. sativa* L.)

194 68. LEERSIA Swart., Prodr. Veg. Ind. Occ., p. 21 (1788)

Spikelets solitary, very shortly peduncled or sessile, falling entire. *Glumes* absent. *Valve* deeply boat-shaped, almost plano-convex in outline, shortly acuminate, obtuse, rigidly ciliate on the margins and keel, 5-nerved, coriaceous, subtending a pale and a bisexual flower. *Pale* narrow, 3-nerved, subcartilaginous except on the hyaline margins, grooved along the outer nerves, with the keel rigidly ciliate, tightly clasped by the inflexed margins of the valve. *Lodicules* 2, fleshy, finely nerved. *Stamens* 6, 3, or 1. *Ovary* ellipsoid; styles distinct, plumose, above. *Grain* ovate or oblong in outline, embraced by the valve and pale.

Perennials, often stoloniferous; culm ribbed, hairy at the nodes, otherwise glabrous; leaf-sheaths longer than the internode of the culm, strongly ribbed, glabrous; ligule membranous; blade flat, folded or rolled, with a prominent or distinct midrib and distinct lateral veins, scabrid, glabrous; inflorescence a contracted panicle; rachis angled.

Species about 7, natives of tropical and subtropical countries; 1 species in South Africa, recorded from the Transvaal, Natal, Basutoland, the Orange Free State, and then to the Albany and George districts. (Type: *L. oryzoides* Sw.)

201 69. EHRHARTA Thunb., Vet. Acad. Handl. Stock., vol. 40, p. 217, pl. 8 (1779)

Spikelets solitary or sometimes clustered, peduncled, awned or awnless, not falling entire. *Flower* 1. *Glumes* persistent, sometimes widely diverging, unequal or subequal, lanceolate or ovate-lanceolate in profile, obtuse or acute, sometimes shortly mucronate, rarely ciliate, membranous, pubescent or glabrous. *Valves* 3; the two lower valves equal or unequal, ovate-lanceolate or linear-oblong in profile, obtuse or produced into a long acumen, sometimes 2-lobed with a short awn from the sinus, transversely rugose, tuberculate or smooth, pilose or villous, scabrid or glabrous, stiffly membranous or coriaceous, empty; the lower shorter or as long as the glumes, sometimes membranous; the upper sometimes shortly mucronate, with 2 unequally lobed appendages at the base; awn, when present, longer or shorter than the body of the valve, usually scabrid. *Uppermost valve* elliptic, oblong-linear or ovate in profile, obtuse, more rarely truncate, sometimes tubercled and scabrid, membranous to coriaceous or almost hyaline, sometimes with a knob-like appendage at the base forming a hinge with the appendage of the upper empty valve, usually glabrous, more rarely long-villous, subtending a pale and a bisexual flower. *Pale* linear in profile or boat-shaped, almost as long as its valve, keeled, finely 2-nerved. *Lodicules* 2. *Stamens* 6 or 3, very rarely 1. *Ovary* obovoid; styles free, plumose or brush-like above, exserted above the base. *Grain* elliptic in outline; embryo about $\frac{1}{2}$ the length of the grain.

Annuals or perennials; culm striate or ribbed, glabrous; leaf-sheath longer or shorter than the internode of the culm, pubescent or glabrous; ligule scarious or membranous, or reduced to a mere rim, sometimes ciliate; blade sometimes much reduced, stiff or flaccid; flat and linear or linear-lanceolate, or folded or setaceous, or filiform, with a distinct midrib and distinct lateral veins, smooth or scabrid, pubescent or glabrous; inflorescence an open or contracted panicle or raceme; primary branches of the inflorescence often panicked at the nodes.

Endemic; species 27, with a fairly wide distribution, especially abundant in the south-western districts of the Cape Province and almost absent from the central districts. (Type: *E. capensis* Thunb.)

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70. PHALARIS Linn., Sp. Pl., ed. 1, p. 54 (1753)

Spikelets solitary, shortly peduncled, not falling entire. *Flower* usually 1, sometimes a second flower present. *Glumes* persistent, completely enclosing the valves, boat-shaped, almost plano-convex in outline, subobtusate, broadly winged on the keel, scabrid, membranous. *Valves* 3, dissimilar; the 2 lower valves varying from more than $\frac{1}{2}$ as long as the uppermost valve to minute scales, empty, rarely one subtending a male flower. *Uppermost valve* ovate-elliptic or ovate-lanceolate in profile, obtuse or acute, chartaceous, 5-nerved, softly pilose, subtending a pale and a bisexual flower. *Pale* oblong-linear in profile, ciliate on the keel, almost hyaline. *Lodicules* 2, hyaline. *Stamens* 3. *Ovary* ellipsoid; styles distinct, plumose above, exerted from the top of the spikelet. *Grain* ovate in outline, enclosed by the valve and pale; embryo $\frac{1}{4}$ as long as the grain.

Annuals or perennials; culm ribbed or smooth, glabrous; leaf-sheath shorter than the internode of the culm, ribbed, glabrous; ligule hyaline; blade flat, closely ribbed, with the midrib distinct or scarcely so, glabrous; inflorescence a dense oblong or, more rarely, a spike-like panicle, sometimes subcapitate or interrupted and lobed; primary branches of the inflorescence sometimes bearing a definite cluster of 7 spikelets with the 4 lowermost long-peduncled and the uppermost 3 usually fertile.

Species about 10, mostly in the Mediterranean region; in South Africa found as weeds or escapes from cultivation. (Type: *P. canariensis* L.)

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71. ANTHOXANTHUM Linn., Sp. Pl., ed. 1, p. 28 (1753)

Spikelets solitary, peduncled, not falling entire. *Flowers* 1—3. *Glumes* persistent, unequal, strongly or evidently keeled, with evident lateral veins, membranous or subhyaline; lower glume about $\frac{3}{4}$ as long as the upper, lanceolate in profile, acute; upper glume as long as or longer than the valves, lanceolate or lanceolate-elliptic in profile, acute, sometimes shortly mucronate. *Valves* 3, dissimilar; 2 lowest valves very similar, oblong-linear in profile, 2-fid or deeply 2-lobed, with an awn from the base or from the back or from the sinus, membranous, villous or pilose, each usually subtending a pale and one or both sometimes also subtending a male flower; awns usually unequal, that of the upper valve as long as the body of the valve, that of the lower valve much shorter. *Pales* (when present) linear, almost as long as their respective valves, 2-keeled, hyaline. *Uppermost valve* $\frac{1}{2}$ to $\frac{3}{4}$ as long as the lower valves, ovate to oblong in profile, obtuse, awnless, delicately 7—1-nerved, 2-keeled, membranous, subtending a pale and a bisexual flower. *Pale* as long as its valve, linear, hyaline. *Lodicules* 0. *Stamens* 3 in the male flower, 2 in the bisexual flower. *Ovary* ellipsoid; styles distinct, plumose above, exerted from the top of the spikelet. *Grain* ovoid; embryo $\frac{1}{4}$ the length of the grain.

Annuals or perennials, sometimes stoloniferous; culm ribbed, glabrous; leaves sometimes all basal and lanceolate; leaf-sheath longer or shorter than the internode of the culm, ribbed, glabrous; ligule membranous; blade flat, narrow-linear, closely

ribbed or ribs distinct, with or without a distinct midrib, rough or smooth, glabrous; inflorescence a cylindric spike-like panicle or a more or less compact but evident panicle.

Species about 20, natives of Europe, Asia, and extra-tropical America; 5 species in South Africa, ranging from the Transvaal, Natal, Basutoland, to the south-western districts of the Cape Province. (Type: *A. odoratum* L.)

208 72. ARISTIDA Linn., Sp. Pl., ed. 1, p. 82 (1753)

Spikelets solitary, peduncled, not falling entire. *Flower* 1. *Glumes* persistent, subequal or unequal, shorter than or as long as the valve, linear in outline, acute, subacute, or obtuse, sometimes 2-fid, acuminate, mucronate, or shortly to long-awned, often scabrid on the keel, membranous, glabrous or minutely pubescent; lower glume shorter than the upper. *Callus* pungent, villous. *Valve* 1, often convolute, sometimes oblong and bilobed and hardly enveloping the flower, gradually tapering to the tip, sometimes jointed at or above the middle, 3-nerved, awned, subtending a pale and the bisexual flower; awn nearly always 3-partite from the base or above the simple base (stipitate), very rarely simple, continuous with the valve or disarticulating from it or deciduous with a portion of the valve, straight or twisted at the foot, with the lobes equal or the middle lobe the longest, sometimes the 2 side awns hair-like as long as to about 6 times as long as the body of the valve, smooth, scabrid, or the middle lobe only or all the lobes plumose. *Pale* shorter than the valve, 2-nerved or nerveless, hyaline. *Lodicules* 2, finely nerved. *Stamens* 3. *Ovary* glabrous; styles free, plumose above, laterally exerted. *Grain* slender, cylindric, sometimes grooved, tightly embraced by the valves.

Annuals or perennials, sometimes caespitose, frequently with thick woolly roots; culm finely striate or ribbed, sometimes subwoody, glabrous, rarely villous at the nodes; ligule usually a line of very short hairs; blade rolled, deeply channelled or flat and narrow-linear, sometimes setaceous, smooth or rough, glabrous; inflorescence a lax or contracted panicle, more rarely a raceme or spike-like.

Species between 340 and 350, found in the warm regions of the Old World; 62 species in South Africa, very widely distributed. (Type: *A. adscensionis* L.)

209 73. STIPA Linn., Sp. Pl., ed. 1, p. 78 (1753)

Spikelet solitary, peduncled, not falling entire; peduncle swollen at the apex, minutely pubescent. *Flower* 1. *Glumes* usually persistent, equal or subequal, as long as or much shorter than the valve, lanceolate or linear in outline, acute, sometimes long-acuminate, 3-nerved, membranous, puberulus or glabrous. *Valve* 1, lanceolate, usually convolute, acuminate or minutely 2-lobed, 3—7-nerved, awned, membranous, subtending a pale and the bisexual flower; awn 2—16 times as long as the body of the valve, terminal, simple, kneed, twisted below, plumose or naked above the knee, sometimes disarticulating from the valve. *Callus* usually pungent and bearded. *Pale* enclosed in the valve, and either equalling it or much shorter. *Lodicules* 2 or 3, equal and rather large or much reduced. *Stamens* 3; anthers often barbellate at the apex. *Ovary* glabrous; styles free, plumose above. *Grain* narrow, subterete, tightly embraced by the hardened valve and pale.

Perennials; culm striate, glabrous; leaf-sheath shorter than the internode of the culm, ribbed, glabrous or pilose; ligule very narrow, membranous, sometimes minutely ciliate; blade flat, closely veined, with a distinct midrib, glabrous or pilose; inflorescence a lax panicle or a contracted raceme; primary branches usually 2—3-nate or whorled and distant on the main rachis, bearing spikelets on the upper half; spikelets sometimes direct on the main rachis.

Many described species, natives of the tropical and temperate regions; 4 species in South Africa, recorded from the northern Transvaal and Natal, through the coastal districts, to the Clanwilliam and van Rhynsdorp districts; also found in the Cradock, Albany, Oudtshoorn, and Uppington districts. (Type: *S. pennata* L.)

210 74. ORYZOPSIS Michaux, Fl. Bor. Amer., vol. 1, p. 51, pl. 9 (1803)

Spikelets solitary, peduncled, not falling entire. *Flower* 1. *Glumes* persistent, equal or subequal, longer than the valve, usually acute, sometimes sub-acuminate, 3—9-nerved, thin. *Valve* 1, ovate, obovate, or lanceolate, convolute, more or less flattened on the back, obscurely 2-lobed, 5- (very rarely 3-) nerved, sometimes awned, rigidly membranous to coriaceous; awn, when present, from the minute sinus, jointed on the valve and easily deciduous, bristle-like, naked. *Pale* shorter than the valve, 2-nerved. *Lodicules* 2, rarely 3, hyaline. *Stamens* 3. *Ovary* glabrous; styles free, short, plumose, laterally exserted. *Grain* oblong in outline, or ovoid, ellipsoid, or obovoid; embryo small.

Tufted perennials; leaf-blade linear, usually long, flat, flaccid, sometimes narrow and convolute; ligule membranous; inflorescence an open or contracted panicle; primary branches of the inflorescence often in distant semi-whorls.

Species about 24, found mostly in the temperate and subtropical regions of the northern hemisphere; 1—2 species in South Africa, recorded from the Orange Free State, but probably introduced. (Type: *O. asperifolia* Michx.)

216 75. PSEUDOBROMUS K. Schum., in Engl. Pflanzenw. Ost. Afr. C., p. 108 (1895)

Spikelets solitary, peduncled, not falling entire. *Flower* 1. *Glumes* persistent, subequal, ovate, lanceolate, or oblong, acuminate, 1—3-nerved, membranous. *Valve* 1, exserted from the glumes, elliptic-ovate in outline, involute, rounded on the back, passing into a straight awn or with the awn subterminal, 3-nerved, membranous; awn more than twice as long as the body of the valve. *Pale* equalling or slightly longer than the valve, lanceolate, 2-keeled. *Lodicules* 2, hyaline, unequally 2-lobed. *Stamens* 3. *Ovary* oblong in outline, pubescent on the top; styles free, very short, plumose above, laterally exserted.

Perennials; leaf-blade flat, broad-linear, flaccid; ligule membranous; inflorescence a large lax nodding panicle.

An African genus of 2 species; 1 species recorded from the northern Transvaal. (Type: *P. silvaticus* K. Schum.)

230 76. SPOROBOLUS R. Br., Prodr. Fl. Nov. Holl., p. 169 (1810)

Spikelets solitary, sessile or peduncled, not falling entire; peduncle usually capillary, swollen at the apex. *Flower* 1. *Glumes* equal or unequal, persistent or caducous, 1-nerved or nerveless, emucronate, seldom keeled; lower often very small or almost obsolete; upper much shorter than, to as long as, the valve, lanceolate, sometimes acuminate, acute or obtuse, membranous. *Valve* 1, elliptic, obtuse, hyaline or similar in texture to the upper glume, glabrous. *Pale* equalling the valve or a little shorter, 2-nerved, often caniculate between the nerves, obtuse, truncate, emarginate or minutely bilobed, sometimes splitting at the base. *Lodicules* delicately hyaline, truncate. *Stamens* 2—3. *Ovary* often globose; styles free, plumose above. *Grain* either falling entire or often the pericarp remains attached to the rhachilla and the seed alone falls through the bursting of the pericarp; pericarp delicate, loose, more or less swelling in water; embryo $\frac{1}{2}$ or less than the length of the seed.

Annuals or perennials, sometimes with a creeping rootstock, sometimes stoloniferous; culms smooth, glabrous; leaves sometimes all basal; leaf-sheath ribbed, sometimes ciliate on the upper portion, glabrous, rarely pilose; ligule ciliate, sometimes reduced to a minute rim; blade usually narrow-linear or rolled or filiform or setaceous, more rarely flat, closely veined, with or without a midrib, sometimes ciliate with cartilaginous hairs, rarely scabrid on the margins, glabrous, more rarely pilose; inflorescence usually a lax panicle, sometimes a subraceme, more rarely contracted and spike-like or of spike-like racemes from the main rhachis; primary branches of inflorescence erect or horizontal, usually 2-nate or whorled on the main rhachis, simple or bearing a single spikelet, or branched, sometimes appearing almost spike-like owing to the crowding of the spikelets, sometimes very short so that the spikelets appear as if fascicled on the main rhachis.

Species about 80, natives of Asia, Africa, temperate and tropical America, and southern Europe; 40 species in South Africa, widely distributed. (Type: *S. indicus* R. Br.)

233 77. POLYPOGON Desv., Fl. Atlant., vol. 1, p. 66 (1798)

Spikelets solitary, subsessile, falling entire. *Glumes* equal or subequal, lanceolate, longer than the valve, keeled, entire or shortly 2-lobed, ciliate on the keel, membranous, each with a single awn, pubescent or glabrous; awns capillary, 2—12 times as long as the body of the glume. *Valve* 1, lanceolate or elliptic-oblong, truncate or emarginate, 5-nerved, with the lateral nerves shortly excurrent or evanescent, with the hyaline tip awned, glabrous; awn as long as to 6 times as long as the body of the valve, sometimes awn reduced to a mucro or absent, often deciduous. *Pale* slightly or much shorter than the valve, lanceolate acute, 2-keeled. *Lodicules* 2, delicate. *Ovary* glabrous; styles free, very short, loosely plumose above, laterally exserted. *Grain* oblong in outline, enclosed by the unaltered valve and pale; embryo small.

Annuals; culm ribbed, glabrous; leaf-sheath ribbed, rough; ligule membranous; blade flat, linear, closely ribbed, with a distinct midrib, scabrid, glabrous; inflorescence a dense terminal solitary spike-like panicle; spikelets often hidden by the numerous and long awns.

Species about 15, widely distributed in the temperate and warmer regions of both hemispheres; 3 species in South Africa, ranging from the northern Transvaal and Natal, through the coastal area to the Cape, and from South West Africa to Namaqualand and the van Rhynsdorp district; also recorded from the Hay district. (Type: *P. monspeliensis* Desv.)

242 78. AGROSTIS Linn., Sp. Pl., ed. 1, p. 61 (1753)

Spikelets solitary, peduncled, not falling entire. *Glumes* persistent, equal or subequal as long as to almost twice as long as the valve, lanceolate, linear, or oblong-lanceolate, sometimes acuminate, acute or obtuse, usually ciliate on the keel, sometimes scabrid, membranous, glabrous. *Valve* 1, lanceolate or linear, acute or obtuse, sometimes truncate and notched at the apex, awned from the back or awnless, 5- (rarely 3-) nerved, with the side nerves evanescent below and often excurrent into fine mucros or bristles, delicately membranous, glabrous or hairy. *Pale* usually shorter than the valve, sometimes much reduced or obsolete, 2-nerved, delicately hyaline. *Lodicules* 2, lanceolate, delicately hyaline. *Stamens* 3. *Ovary* ellipsoid; styles free, very short, plumose above, laterally exserted. *Grain* free, oblong in outline, enclosed in the scarcely altered valve and pale; embryo short.

Annuals or perennials of varying habit; culm 2—9-noded, sometimes the lower nodes rooting, smooth or slightly striate or more or less rough below the nodes; leaf-sheath ribbed, rough, glabrous; ligule long, membranous; blade narrow-linear, flat or rarely folded, acuminate, with a distinct midrib, scabrid or smooth, glabrous;

inflorescence an open, sometimes effuse, panicle, more rarely spike-like; primary branches of the inflorescence often fascicled on the main rachis, naked at, or bearing spikelets almost to, the base, often scabrid.

Species over 100, widely dispersed; 10 species in South Africa, with a wide distribution, but generally absent from the central districts. (Type: *A. stolonifera* L.)

245 79. GASTRIDIDUM Beauv., Agrost., p. 21, t. 6, f. 6 (1812)

Spikelets solitary, unequally peduncled, not falling entire; peduncle linear, thickening above. *Glumes* persistent, unequal, slightly saccate near the base, membranous; lower glume longer than the upper, lanceolate, long-acuminate, with membranous margins, 1-nerved, somewhat keeled, scabrid on the keel; upper glume similar to the lower. *Valve* 1, elliptic, rounded on the back, concave on the face, awned from the back, pilose; awn capillary, 5 times as long as the body of the valve, scabrid. *Pale* shorter than the valve, elliptic, 2-lobed, 2-nerved, pilose on the back. *Lodicules* 2, hyaline. *Ovary* subglobose; styles free, plumose above. *Grain* not seen.

Annuals; culm smooth, glabrous; leaf-sheath shorter than the internode of the culm, ribbed, glabrous; ligule membranous; blade narrow-linear, flat, ribbed, scabrid, glabrous; inflorescence a number of racemes whorled on the central rachis and the whole forming a very compact spike-like panicle.

Species 2, natives of the Mediterranean region, western Europe, the Canary Islands, and America; 1 species recorded from the Cape Peninsula, probably introduced. (Type: *G. ventricosum* (Gouan) Schinz & Thell.)

247 80. CALAMAGROSTIS Adans., Fam. Pl., vol. 2, p. 31 (1763)

Spikelets solitary, shortly peduncled, not falling entire. *Flower* 1. *Glumes* persistent, equal or subequal, linear-lanceolate, long-acuminate, acute, keeled, membranous; lower glume 1-nerved; upper glume 3-nerved. *Valve* 1, shorter than the glumes, lanceolate, subacute, more or less shortly bifid, 3—5-nerved, awned from near the base, membranous, glabrous. *Awn* longer or shorter than the glumes, kneed or straight. *Callus* small, long hairy, with the hairs usually much exceeding the valve. *Pale* as long as or shorter than the valve, 2-nerved, hyaline. *Lodicules* 2, hyaline. *Stamens* 3. *Ovary* glabrous; styles free, plumose above, laterally exserted. *Grain* enclosed by the hardly changed valve and pale, free; embryo small.

Usually robust perennials; culm striate, glabrous; leaf-sheath ribbed, glabrous; ligule scarious; blade linear, flat, ribbed, glabrous; inflorescence a spike-like panicle.

Species over 100, natives of the temperate regions of both hemispheres; 2 species in South African, recorded from the Hay, Aliwal North, and Swellendam districts. (Type: *Arundo calamagrostis* L.)

256 81. LAGURUS Linn., Sp. Pl., ed. 1, p. 81 (1753)

Spikelets solitary, peduncled or subsessile, not falling entire. *Flower* 1, rarely flowers 2. *Glumes* persistent, equal or subequal, very narrow, long-acuminate, 1—3-nerved, with the centre nerve very firm and produced into a dense plumose awn, sparsely covered with long hairs, hyaline; awn longer than the body of the glume. *Valve* 1, rarely 2, shorter than the glumes, one or both subtending a pale and a bisexual flower, lanceolate, 5-nerved, membranous, unequally 3-awned, glabrous; the two terminal awns about as long as the body of the valve; awn from the back of the valve, 3 times as long as the body of the valve. *Pale* (or pales when 2 present) somewhat shorter than the valve, ovate, acuminate, 2-keeled. *Lodicules* 2, hyaline. *Stamens* 3. *Ovary* ellipsoid, glabrous; styles free, plumose above, laterally

exserted. *Grain* linear-oblong in outline, tightly enclosed by the slightly hardened valve; embryo small.

Annual; culm ribbed, pubescent; leaf-sheath distinctly ribbed, softly pilose; ligule membranous; blade flat, linear-lanceolate, distinctly nerved, without a very distinct midrib; inflorescence a dense ovoid solitary spike-like panicle, softly villous and long bristly from the plumose awns of the glumes and the long-awned valves.

Species 1, native of the Mediterranean region; recorded in South Africa from the Kingwilliamstown, Port Elizabeth, and Cape districts, but probably introduced. (Type: *L. ovatus* L.)

257 82. *HOLCUS* Linn., Sp. Pl., ed. 1, p. 1047 (1753)

Spikelets solitary, peduncled, falling entire; peduncle terete, pilose. *Flowers* 1—2. *Glumes* unequal; lower glume lanceolate, keeled, ciliate on the keels and margins, 1-nerved, membranous, awned, pubescent; awn, when present, $\frac{1}{2}$ as long as the body of the glume; upper glume larger than the lower, elliptic-lanceolate or ovate, keeled, with two prominent lateral nerves, ciliate on the keel and margins, pubescent, awned or shortly mucronate; awn (when present) as long as the body of the glume. *Valves* 2, shorter than the glumes, unequal; lower valve ovate, convex on the back, obtuse or acute, obscurely 3—5-nerved, awnless, subtending a pale and a bisexual flower. *Pale* smaller than the valve, narrow-lanceolate, hyaline or membranous. *Lodicules* 2, delicate. *Stamens* 3. *Ovary* glabrous; styles distinct, plumose above, laterally exserted. *Grain* enclosed by the valve and pale, often adhering to the pale; embryo small. *Upper valve* shorter than to about as long as the lower, lanceolate, awned, glabrous, subtending a pale and a bisexual or male flower or sometimes subtending only a pale; awn as long as to twice as long as the body of the valve. *Pale* smaller than its valve.

Annuals; culm ribbed, glabrous or pilose above; leaf-sheath about as long as the internode of the culm, ribbed, pubescent or pilose; ligule membranous; blade flat, linear, without a distinct midrib, smooth, pubescent or pilose; inflorescence a contracted panicle, sometimes almost spike-like, oblong or interrupted; primary branches of the inflorescence sometimes fascicled on the main rhachis.

Species about 6, mostly indigenous to Europe and the Mediterranean region; 2 species in South Africa, recorded from some of the eastern, south-eastern, and south-western districts of the Cape Province; also recorded from Namaqualand and the northern Transvaal. (Type: *H. lanatus* L.)

258 83. *PRIONANTHIUM* Desv., Opusc., p. 64 (1831)

(*Prionachne* Nees)

Spikelets solitary or 2-nate, more rarely 3-nate, sessile or subsessile, not falling entire. *Flowers* 2. *Glumes* persistent, subequal, more or less boat-shaped, obtuse, usually muricate-pectinate on the keel, more rarely the keel smooth, with broad membranous margins, coriaceous; lower glume sometimes standing away from the main rhachis. *Valves* slightly shorter than the glumes, lanceolate or lanceolate-oblong, subacute or acute, mucous, 3-nerved, membranous or hyaline, each subtending a pale and a bisexual flower. *Pales* 2, slightly shorter than the valves, sublinear, 2-nerved, 2-toothed, hyaline. *Lodicules* 2, broadly cuneate or subquadrate, minute, fleshy. *Stamens* 3. *Ovary* glabrous; styles free; plumose above, laterally exserted. *Grain* narrow-oblong in outline, enclosed by the pale and valve.

Tufted annuals; culm glabrous or pubescent above; leaf-sheath glabrous or pubescent; ligule a line of hairs; blade linear or filiform, sometimes convolute, softly pubescent or glabrous; inflorescence a solitary terminal spike-like panicle or raceme.

Endemic; species 3, distributed from the Transvaal, through some of the eastern districts to the Cape and Namaqualand. (Type: *P. rigidum* Desv.)

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84. AIRA Linn., Sp. Pl., ed. 1, p. 63 (1753)

Spikelets solitary, peduncled, not falling entire; peduncle terete, glabrous. *Flowers* 2. *Glumes* persistent, equal or subequal, ovate or elliptic, acute, 1-nerved, delicately membranous. *Valves* 2, shorter than the glumes, lanceolate or ovate-lanceolate, rounded on the back, acute, sometimes acuminate, often 2-toothed or -lobed, faintly or obscurely 5-nerved, awned from below the middle or awnless, sometimes the upper valve awned and the lower awnless; both valves subtending a pale and a bisexual flower; awn kneed, twisted below, capillary, shorter than to almost twice as long as the body of the valve. *Pales* slightly shorter than their valves, narrow, 2-toothed, membranous or subhyaline. *Lodicules* 2, delicate. *Stamens* 3. *Ovary* glabrous; styles free, short, plumose above, laterally exerted near the base of the spikelet. *Grain* more or less adhering to its valve and pale; embryo suborbicular, $\frac{1}{3}$ — $\frac{1}{2}$ as long as the grain.

Small annuals; culm smooth, glabrous; leaf-sheath shorter than the internode of the culm; ligule hyaline; blade almost filiform; inflorescence a lax panicle; primary branches of the inflorescence often 2-nate on the main rhachis.

Species about 6, natives of the Mediterranean region; 1 species in South Africa, found in the coastal districts of the Cape Province; also recorded from Namaqualand and the Albany district. (Type: *A. praecox* L.)

NOTE.—*A. caespitosa* is the historic type, but is rejected so that the name *Deschampsia* may be retained.—E. P. P.

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85. POAGROSTIS Stapf, Fl. Cap., vol. 7, p. 760 (1900)

Spikelets solitary, peduncled, not falling entire; peduncles long-capillary. *Flower* 1. *Glumes* persistent, equal, as long as the valve, lanceolate or linear-oblong, acute, closely 3-nerved at the very base, with the middle nerve percurrent or almost so, membranous, glabrous. *Valve* 1, lanceolate, acute, mucicous, faintly 7-nerved, membranous, finely silky-villous. *Pale* subequalling its valve, lanceolate, acute, faintly 7-nerved below the middle, sparsely villous. *Lodicules* 2, small, cuneate, glabrous. *Stamens* 3. *Ovary* ellipsoid, glabrous; styles free, plumose above, laterally exerted. *Grain* oblong in outline; pericarp subcrustaceous; embryo about $\frac{1}{4}$ — $\frac{1}{3}$ the length of the grain.

An annual; culm smooth, glabrous; leaf-sheath ribbed, glabrous; ligule a fringe of hairs; blade narrow-linear, distinctly veined, without a very distinct midrib, usually scantily pilose; inflorescence a panicle.

Endemic; species 1, recorded from the Ceres district. (Type: *P. pusilla* (Nees) Stapf)

NOTE.—Closely related to the mucicous species of *Pentastichitis*, from which it differs in the spikelet having only one flower.—E. P. P.

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86. DESCHAMPSIA Beauv., Ess. Agrost., p. 91, pl. 18, f. 3 (1812)

Spikelets solitary, peduncled, not falling entire; peduncle long, capillary. *Flowers* 2, very rarely some spikelets with only one flower, rarely a third terminal male flower present. *Glumes* persistent, as long as the valves, lanceolate, acute, keeled, shining, membranous, glabrous. *Valves* 2, oblong-lanceolate, toothed at the apex, awned from the base, subhyaline or membranous, each usually subtending a bisexual flower, rarely a third valve present which is empty or subtends a male flower; awn slightly longer than

the body of the valve, slender, twisted at the base. *Pales* narrow, 2-nerved, hyaline. *Stamens* 3. *Ovary* ellipsoid; styles free, plumose above. *Grain* oblong in outline, free within the pale.

Perennials or annuals; culm smooth, glabrous; leaf-sheath ribbed, glabrous; ligule hyaline; blade narrow-linear, with a prominent midrib and obscure lateral veins, scabrid, glabrous; inflorescence a lax panicle; primary branches of the inflorescence rather distant and whorled on the main axis.

Species about 20, natives of the temperate regions of both hemispheres; 1 species in South Africa, recorded from the Drakensbergen in the Barkly East district. (Type: *D. caespitosa* (L.) Beauv.)

271 87. TRISETUM Pers., Syn. Pl., vol. 1, p. 97 (1805)

Spikelets solitary, peduncled, not falling entire. *Flowers* 2 to several. *Glumes* persistent, equal or more or less unequal, acute, keeled, hyaline; lower glume 1—3-nerved; upper glume 3-nerved. *Valves* 2—6, equalling or exceeding the glumes, acutely 2-toothed, with broad margins, faintly or obscurely 3—5-nerved, membranous, hyaline at the tip, awned and sometimes with fine short bristles from the teeth, subtending bisexual or male flowers or the upper without flowers; awn from the back near the tip, fine, straight or kneed and twisted below. *Pales* shorter than the valves, 2-toothed, hyaline. *Stamens* 3. *Ovary* glabrous; styles free, very short, plumose above, laterally exerted. *Grain* oblong in outline, embraced by the usually slightly hardened back of the valve; embryo small.

Perennials, rarely annuals; leaf-blades usually flaccid; ligule hyaline, sometimes minutely ciliate and hairy from the back; inflorescence usually a contracted often spike-like panicle, more rarely opening and lax.

Species 50—60, natives of the temperate region of the northern hemisphere, South America, Australia, and New Zealand; 1 species in South Africa, recorded from the Ceres and Fraserburg districts. (Type: *T. flavescent* (L.) Beauv.)

273 88. AVENA Linn., Sp. Pl., ed. 1, p. 79 (1753)

Spikelets solitary, peduncled, not falling entire. *Flowers* 1—2, rarely 3, bisexual, rarely with 1—2 additional male flowers. *Glumes* persistent, equal or subequal, longer than the valves, lanceolate or lanceolate-linear, acute, sometimes acuminate, rounded on the back, 7—11-nerved, scarious, glabrous. *Valves* 3—5, unequal and dissimilar. *Uppermost valve* hyaline, empty or subtending a rudimentary male flower; next valve (when 4—5 valves present) lanceolate, almost convolute, obtuse, awnless, subtending a flower; normal lower valves lanceolate, rounded on the back, acuminate, subacute, awned from the middle of the back, stiffly membranous, each subtending a pale and a bisexual flower; awn slightly longer than to almost twice as long as the body of the valve, kneed and twisted below. *Pales* almost as long as their respective valves, 2-toothed or bifid, 2-keeled, ciliate on the keels. *Lodicules* 2, rather large, hyaline. *Ovary* densely villous from the base; styles free, extremely short or 0; stigmas laterally exerted. *Grain* oblong in outline, grooved in front, hairy, tightly embraced by the hardened valve and pale; embryo small.

Annuals; culm smooth, glabrous; leaf-sheath ribbed, glabrous; ligule hyaline; blade linear, flat, strongly ribbed, scabrid; inflorescence a lax panicle, sometimes a subraceme.

Species about 7, natives of the Mediterranean region, some widely spread as weeds; 5 species in South Africa, found in the coastal districts of the Cape Province, also recorded from the Transvaal. (Type: *A. sativa* L.)

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89. *HELICOTRICHUM* Bess., ex Schult., Mant. Syst. Veg. vol. 2, addit. 1, p. 526 (1827)

Spikelets solitary, peduncled, usually erect or suberect, not falling entire; rhachilla more or less hairy, disarticulating above the glumes and between the valves, sometimes produced into a short bristle beyond the uppermost valve. *Flowers* 2—6, all bisexual or the upper male. *Glumes* persistent, subequal, lanceolate or lanceolate-linear, sometimes acuminate, acute or subacute, keeled, hyaline or subhyaline; lower glume 1—3-nerved; upper glume 3—7-nerved (3-nerved in the South African species). *Valves* 3—6, more or less decreasing in size upwards, exserted from the glumes, rarely subincluded, more or less herbaceous, with scarious or hyaline tips, often rather firm, at length becoming hardened, acute, sometimes acuminate, bifid, rarely 4-fid, with or without bristles from the lobes, 5—11-nerved, awned, all or the 2—4 lower each subtending a pale and a bisexual flower; awn dorsal, from the middle or slightly above the middle of the valve, kneed and twisted below the bend, with the main awn 2—3 times as long as the body of the valve and scabrid or ciliate or the lateral awns about as long as or very much shorter than the body of the valve and scabrid. *Pales* shorter than their respective valves, linear or linear-spathulate, 2-toothed, 2-keeled, ciliate on the keels, pubescent or almost glabrous. *Lodicules* 2, rather large, hyaline. *Stamens* 3. *Ovary* hairy from above the middle or at the apex only; styles distinct, short, plumose above, laterally exserted. *Grain* oblong in outline, hairy at the apex, embraced by the hardened valve and pale; embryo small.

Caespitose perennials; culm ribbed, glabrous; leaf-sheath shorter or longer than the internode of the culm, ribbed, glabrous; ligule hyaline or scarious; blade linear, flat or rolled, sometimes setaceous, strongly ribbed, with or without a distinct midrib, rough or smooth, glabrous; inflorescence a narrow, more rarely diffuse, panicle.

Species about 65, mainly natives of temperate regions of the northern hemisphere, also occurring on the mountains of Java and the high mountain regions of Africa; 12 species in South Africa, distributed from the Transvaal, Zululand, Natal, Basutoland, the Orange Free State, and through the coastal area to the Cape and Namaqualand. (Type: *H. sempervirens* (Host.) Bess.)

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90. *TRISTACHYA* Nees, Agrost. Bras., p. 458 (1829)

Apparent spikelet really composed of 3 sessile (rarely peduncled) spikelets; spikelets not falling entire. *Flowers* 2. *Glumes* persistent, equal or unequal, exceeding the valves; lower sometimes more than $\frac{1}{2}$ the length of the upper, lanceolate, oblong-lanceolate, or linear-lanceolate, often long-acuminate, prominently 3-nerved, rarely 5-nerved, glabrous or covered with black tubercles, cartilaginous-hairy; upper like or unlike the lower, sometimes long-ciliate from the tubercled-based hairs, without black tubercles. *Valves* 2, dissimilar; lower very similar to the glumes, 3—7- (rarely 9-) nerved, subtending a pale and a male flower. *Pale* linear or linear-oblong, 2-keeled, thinner than the valve and subequalling it. *Upper valve* stiffly membranous, convolute, 3-awned or 2-lobed and awned from the sinus, finely 5—7-nerved, pubescent or glabrous, subtending a pale and a bisexual flower; awn 4—10 times as long as the body of the valve, scabrid or pubescent below the bend; lateral awns (when present) 3—4 times as long as the body of the valve. *Pale* linear, obtuse, 2-keeled, more or less hyaline. *Lodicules* 2, narrowly cuneate, very fleshy. *Ovary* glabrous or hairy at the apex; styles free, plumose above, laterally exserted. *Grain* obovoid or linear-oblong in outline, tightly embraced by the valve and pale; embryo large.

Perennials, rarely annuals, sometimes shaggy at the base; culm smooth, glabrous or villous at the nodes; leaf-sheath ribbed, glabrous or scantily pilose from the tubercule-base hairs; ligule a fringe of hairs; blade longitudinally folded, ribbed, without a distinct midrib, smooth or scabrid, glabrous or hispid with tubercule-based hairs, more rarely cartilaginous-ciliate from bulbous-based hairs.

Species about 25, natives of Africa, Madagascar and tropical America; 4 species in South Africa, spread from the Transvaal, Swaziland, Natal, Basutoland, the Orange Free State, and through the coastal area to the Swellendam district; also recorded from the Middelburg and Queenstown districts. (Type: *T. leiostachya* Nees)

278 91. TRICHOPTERYX Nees, Lindl. Nat. Syst., ed. 2, p. 449 (1836)

(*Trichopteryx* Nees of Fl. Cap., partly)

Spikelets solitary, peduncled, not falling entire. *Flowers* usually 2. *Glumes* more or less persistent, unequal, membranous to thinly chartaceous, 3-nerved, glabrous or hairy; lower lanceolate, ovate, or ovate-oblong, acute, rarely obtuse, $\frac{1}{3}$ — $\frac{1}{2}$ the length of the spikelet; upper narrowly lanceolate to narrowly ovate, acuminate, acute, as long as or nearly as long as the spikelet. *Valves* 2, lower similar to the upper glume but as long as the spikelet, 3- (rarely 1-) nerved, subtending a pale and a male flower. *Pale* linear or linear-lanceolate, much shorter than the valve, 2-keeled, with the keel narrowly winged, thinly membranous. *Upper valve* linear to linear-lanceolate, finely 5—7-nerved, with a dense submarginal tuft of hairs on each side about the middle, otherwise pubescent or glabrous, prominently 2-lobed and usually with each lobe tapering into a capillary bristle, awned from between the 2 lobes, subtending a pale and a bisexual flower; awn very slender, bent and twisted below the bend. *Pale* linear, subequal to the valve and embraced by its involute margins, 2-nerved, membranous. *Lodicules* 2, narrowly cuneate. *Stamens* 2; anthers small. *Ovary* glabrous; styles free, plumose above, laterally exerted. *Grain* oblong or obovate-oblong in outline; embryo over $\frac{1}{2}$ the length of the grain.

Annuals or perennials; culm erect or geniculately ascending, few- to many-noded, branched or simple, villous at the nodes; leaf-sheath ribbed, pilose; ligule ciliate; blade narrow-linear or almost filiform, closely ribbed, without a distinct midrib, usually pilose with bulbous-based hairs; inflorescence a loose or contracted panicle; primary branches of the inflorescence fascicled on the main rachis, scabrid.

Species 7, natives of Africa and Madagascar; 1 species in South Africa, recorded from the Transvaal, Zululand, and Natal. (Type: *T. dregeana* Nees)

278a 92. LOUDETIA Hochst., ex Steud. Syn. Pl. Glum., vol. 1, p. 238 (1854)

(*Trichopteryx* Nees of Fl. Cap. partly)

Spikelets solitary or in pairs, rarely in threes, peduncled, not falling entire. *Flowers* 1—2. *Glumes* persistent, unequal, chartaceous to coriaceous, 3- (rarely 5-) nerved, glabrous or bristly from black or brown tubercles; lower narrowly lanceolate to broadly ovate or ovate-elliptic, acuminate, acute, obtuse, or truncate, rarely setaceously acuminate, $\frac{1}{4}$ — $\frac{3}{4}$ the length of the spikelet; upper linear-lanceolate to lanceolate, obtuse or truncate, less often acute and rarely setaceously acuminate, as long as or nearly as long as the spikelet. *Valves* 2; lower somewhat similar to the upper glume, 3- (rarely 5—7-) nerved, subtending a pale and a male flower or sometimes a pale only. *Pale* linear to linear-lanceolate, shorter than the valve, 2-keeled, membranous. *Upper valve* linear to linear-lanceolate, shortly 2-lobed, rarely entire, with the lobes obtuse or acute, awned from between the 2 lobes or from the tip, 5—9-nerved, thinly coriaceous or

coriaceous, pilose, pubescent to glabrescent, subtending a pale and a bisexual flower; awn bent, twisted below the bend. *Pale* linear, as long as the valve, 2-keeled, channelled between the keels. *Lodicules* 2, linear or narrowly cuneate. *Stamens* 2, rarely 3; anthers linear. *Ovary* glabrous; styles free, plumose above, laterally exserted. *Grain* linear to oblong in outline, tightly embraced by the valve and pale; embryo large.

Perennials or rarely annuals; culm mostly erect, slender to robust, simple or rarely branched, 1—5-noded; leaf-blades narrowly linear to linear, flat or convolute, rigid; ligule reduced to a hairy rim; inflorescence an open or contracted, rarely a spike-like, panicle.

Species about 40, mainly African, a few species in Madagascar and 1 species in South America; 7 species in South Africa, recorded from the Transvaal, Swaziland, Zululand, Natal to Pondoland; also found in South West Africa. (Type: *L. elegans* Hochst.)

280 93. DANTHONIA Lam. & DC., Fl. Fr., ed. 3, vol. 3, p. 32 (1805)

Spikelets solitary, peduncled or sessile, not falling entire; peduncles scabrid. *Flowers* 2—8; the lower bisexual; the upper usually male. *Glumes* persistent, equal or subequal, longer or shorter than the valves, linear or lanceolate, more rarely ovate, sometimes long-acuminate, obtuse or acute, keeled, 3—9- (rarely 1-) nerved, often with transverse veins, hyaline to scarious or subherbaceous, glabrous. *Valves* 2—8, varying much in shape, usually decreasing in size upwards, 2-lobed, usually awned from the sinus and sometimes with a fine awn from each lobe; the uppermost valve sometimes much reduced, or empty, or subtending male flowers. *Normal valves* firmly membranous to chartaceous, 7—11- (rarely 5-) nerved, sometimes the 2 lobes reduced to minute teeth and the awn to a mucro, hairy, often with the hairs partly gathered in variously arranged tufts, very rarely glabrescent, subtending a pale and a bisexual flower; lobes of the valve, when present, free, rarely more or less adnate to the awn, with or without a bristle at the tip; central awn, when present, from $\frac{1}{2}$ as long to 3 times as long as the body of the valve and the lateral awns, when present, slightly longer than the body of the valve. *Pales* lanceolate or oblong or spatulate, obtuse, 2-keeled, ciliate on the keels, subhyaline. *Lodicules* 2, usually large and ciliate. *Stamens* 3. *Ovary* glabrous; styles free, plumose above, laterally exserted. *Grain* oblong, obovate, or elliptic in outline; embryo $\frac{1}{3}$ — $\frac{1}{2}$ the length of the grain.

Perennials, more rarely annuals, often villous at the base; culm ribbed, glabrous; leaf-sheath ribbed, glabrous; ligule ciliate; blade long or short, narrow-linear, often curled, usually rolled, more rarely flat, ribbed or almost smooth, sometimes rough, glabrous, more rarely pilose, pubescent on the ribs; inflorescence a contracted panicle, sometimes compact and more or less globose, more rarely a dense distichous spike.

Species about 100, natives mainly of the warm temperate regions or in dry areas or on mountains if in the tropics; many species natives of Africa and Australia and several species found in North America; 29 species in South Africa with a wide distribution. (Type: *D. spicata* (L.) Beauv.)

280a 94. CHAETOBROMUS Nees, in Lindl. Nat. Syst., ed. 2, p. 449 (1836) partly

Spikelets solitary, peduncled, falling entire with the upper part of the peduncle; peduncle articulated about the middle or above the middle, villous at the articulation. *Flowers* 3—4. *Glumes* equal or subequal, enclosing the valves, lanceolate, acuminate, acute, several-nerved, keeled, scabrid on the keel, membranous, pubescent. *Valves* 3—4, decreasing in size upwards,

lanceolate or lanceolate-oblong, 7—9-nerved, membranous; lowest valve with a perfect or more or less reduced awn, but without bristles, very rarely bristles present, glabrous or with a few scattered hairs; following valves 2-lobed, with a single awn from the sinus and with 2 delicate bristles from the lobes, each subtending a pale and a bisexual flower; a central awn 2—3 times as long as the body of the valve; lateral awns shorter to slightly longer than the body of the valve. *Pales* linear or oblong, equalling their respective valves, obscurely 3-toothed, hyaline. *Lodicules* 2, cuneate, glabrous. *Stamens* 3. *Ovary* glabrous; styles distinct, plumose above, laterally exerted. *Grain* almost spindle-shaped or linear-oblong in outline, tightly enclosed by the slightly altered valve and pale; embryo short.

Perennials; roots sometimes thick and villous; culm striate, glabrous; leaf-sheath ribbed, scantily pilose; ligule ciliate; blade flat or rolled, linear or linear-lanceolate, without a distinct midrib, pilose; inflorescence a panicle; primary branches of the inflorescence solitary on the main rachis.

Endemic; species 5, found from Namaqualand to the Cape. (Type: *C. involucrata* (Steud.) Nees)

280b 95. PENTASCHISTIS Stapf, in Fl. Cap., vol. 7, p. 480 (1899)

(*Achneria* Munro of the Fl. Cap.)

Spikelets solitary, peduncled, not falling entire. *Flowers* 2, very rarely 3, bisexual. *Glumes* persistent, equal or subequal, enclosing the valves, lanceolate, acuminate, keeled or closely 3-nerved at the very base, very rarely strongly 3-nerved throughout the length, hyaline or subhyaline. *Valves* 2, rarely 3, 2-lobed, awnless or awned from the sinus, rarely only the upper valves awned, with the lobes produced into a fine bristle from the inner angle to which they are often more or less adnate, rarely 3—4-fid with all the divisions bristle-like, finely or obscurely 5—11-nerved, membranous, hairy between the nerves or glabrous, subtending a pale and a bisexual flower. *Pales* 2-keeled, 2-toothed, more or less equalling the valves. *Lodicules* 2, small, cuneate, nerved, glabrous. *Stamens* 3. *Ovary* oblong in outline, glabrous; styles distinct, plumose above, exerted laterally. *Grain* oblong in outline; embryo about $\frac{1}{4}$ the length of the grain.

Perennials, rarely annuals; leaf-blade very variable; ligule a fringe of hairs; inflorescence an open or contracted panicle, sometimes the panicle spike-like, sometimes with the primary branches 2-nate and subdivided dichotomously or more often trichotomously; branches smooth, finely scabrous or tuberculate.

Species about 60, mainly Africa; 3 species in Madagascar, 1 in St. Paul's Island and 2 naturalized in Australia; 52 species in South Africa with a wide distribution. (Type: *P. aristoides* (Thunb.) Stapf)

NOTE.—The South African genus *Achneria* Munro (non Beauv.) was renamed *Afrachneria* by Sprague in *Journ. Bot. Brit. & For.*, vol. 60, p. 138 (1922). Munro erroneously referred the South African plants to the genus *Achneria* Beauv. (*Harv. Gen. S. Afr. Pl.*, ed. 2, p. 449 (1868), but as this identification is admittedly incorrect, the genus, if accepted as distinct from *Pentastichis* Stapf, must bear the name *Afrachneria* Sprague. McClean in *S. Afr. Journ. Sc.*, p. 273 (1926) transfers all the species of *Achneria* (sensu Fl. Cap.) to *Pentastichis* and this has been followed here.—E. P. P.

280c 96. PENTAMERIS Beauv., Ess. Agrost., p. 92, pl. 18, f. 8 (1812)

Spikelets solitary, peduncled, not falling entire; peduncle long-capillary, swollen at the apex, scabrid. *Flowers* 2, bisexual. *Glumes* persistent, equal, similar, much longer than the valves, ovate-lanceolate, long-acuminate, acute, 1-nerved or very closely 3-nerved at the base, membranous to hyaline, glabrous. *Valves* 2, equal, similar, oblong, 2-lobed, awned from the sinus and a fine bristle from the inner side of each lobe, 2—11-nerved, membranous, each subtending a pale and a flower; central awn 4—5 times as long as the body of the valve; lateral awns as long as or twice as long as

the body of the valve. *Pales* longer or shorter than their respective valves, 2-toothed or deeply 2-lobed, 2-keeled. *Lodicules* 2, cuneate, nerved, glabrous, sometimes ciliate. *Stamens* 3. *Ovary* obovoid, with a very dense deciduous tomentum of branched hairs at the top; styles distinct, short, plumose above, laterally exserted. *Grain* enclosed by the slightly hardened valve and pale; pericarp rather loose and crustaceous; embryo small.

Perennials; culm striate, glabrous; leaf-sheath glabrous; ligule ciliate; blade long-linear, sometimes longitudinally folded, sometimes curled, ribbed, with a distinct midrib, scabrid, glabrous or pilose; inflorescence a large lax or somewhat contracted panicle, sometimes more or less trichotomously branched.

Endemic; species 8, found in the coastal districts from the Cape to the Riversdale district; also recorded from the Zwartbergen in the Oudtshoorn and Prince Albert districts. (Type: *P. thurarii* (Desv.) Beauv.)

280d 97. DANTHONIOPSIS Stapf in Hook. Ic. Pl., pl. 3075 (1916)

Spikelets paired or rarely in threes, peduncled, not falling entire. *Flowers* 2. *Glumes* persistent, unequal, 3—5-nerved, scarious-membranous to chartaceous, rarely thinly coriaceous; lower glume smaller, narrowly ovate, elliptic-ovate or elliptic-oblong, acute or obtuse, $\frac{1}{3}$ — $\frac{2}{3}$ the length of the spikelet; upper glume lanceolate, ovate or oblong-elliptic, caudate-acuminate. *Lower valve* similar to the upper glume, lanceolate to ovate-oblong, as long as or slightly shorter than the spikelet, 5—9- (rarely 3—11-) nerved, subtending a pale and a male flower. *Pale* narrow, 2-keeled, with the keels very narrowly winged, membranous. *Upper valve* 7—9-nerved, deeply bifid, with the lobes acute and sometimes produced into a fine scaberulous bristle, transversely bearded on the back either with a continuous beard below each lobe or with 6—8 distinct tufts of hairs, awned from the sinus of the 2 lobes, subtending a pale and a bisexual flower; awn kneed and twisted below the bend. *Pale* similar to that of the lower valve but the keels firmer and usually with wider wings and the wings usually bearing a lateral appendage at the apex. *Lodicules* 2, cuneate, fleshy. *Stamens* 3, both in the male and bisexual flower. *Ovary* glabrous; styles distinct, plumose above, laterally exserted. *Grain* oblong to ovate-oblong in outline, embryo about $\frac{1}{2}$ as long as the grain.

Perennials, rarely annuals; culms simple or branched towards the base; leaf-blades linear or lanceolate-linear, flat; ligule reduced to a fringe of hairs; inflorescence a more or less contracted or open panicle.

Species 9, natives of Africa and Arabia; 3 species in South Africa, recorded from the northern Transvaal. (Type: *D. viridis* (Rendle) Hubb.)

280e 98. STREBLOCHAETE Hochst. ex Pilger in Engl. Bot. Jahrb., vol. 37, Beibl. 85, p. 61 (1906)

Spikelets solitary or 2-nate, peduncled, not falling entire; peduncle, semiterete. *Flowers* 2—4, bisexual. *Glumes* persistent, herbaceous, glabrous; lower glume shorter than the upper, linear-lanceolate, acute, 3-nerved; upper glume linear-lanceolate, acute, 7-nerved. *Valves* 2—6, when more than 2, then long exserted from the glumes and decreasing in size upwards; normal valves linear-lanceolate, 2-lobed, awned from the sinus, 7—8-nerved, herbaceous, glabrous, subtending a pale and a bisexual flower; awn nearly 3 times as long as the body of the valve; upper valve or valves empty; uppermost valve rudimentary. *Pale* linear, 2-lobed, ciliate above, 2-keeled and channelled between the keels. *Rhachilla* distinct between the valves. *Callus* distinct, villous. *Lodicules* 2, cuneate, hyaline. *Stamens* 3. *Ovary* oblong in outline, glabrous; styles distinct, plumose above, laterally

exserted. *Grain* linear-oblong in outline, crowned by the persistent style bases, free between the valve and pale; embryo small.

Perennial, trailing; leaf-sheath as long as the internode of the culm or slightly shorter, ribbed, glabrous or somewhat pubescent; ligule membranous; blade flat, linear, long-acuminate, with a distinct midrib and fine nerves, glabrous; inflorescence a narrow lax panicle.

Species 1, found in Africa, Java, and the Philippine Islands; in South Africa recorded from the Drakensbergen in Natal, the Kingwilliamstown and Somerset East districts. (Type: *S. longiarista* (A. Rich.) Pilger)

280f **99. CRINIPES** Hochst., *Flora*, vol. 38, p. 279 (1855)

Spikelets solitary, unequally peduncled, not falling entire; peduncle semiterete. *Flowers* 3—4, bisexual. *Glumes* persistent, subequal, lanceolate, acute, 1-nerved, glabrous. *Valves* 3—4, becoming somewhat smaller above, with a scabrid awn about $\frac{1}{4}$ as long as the body of the valve from the tip, or awn reduced to a short mucro, 3—7-nerved, pilose, subtending a pale and a flower. *Pale* about as long as its valve, lanceolate, 2-keeled, channelled between the keels, truncate and fimbriate at the apex, ciliate on the keel above. *Callus* pilose. *Lodicules* 2, cuneate. *Stamens* 3. *Ovary* ellipsoid, glabrous; styles distinct, plumose above. *Grain* linear-oblong in outline; embryo small.

Caespitose perennials; culm ribbed, glabrous; leaf-sheath longer than the internode of the culm, ribbed, glabrous; ligule ciliated; blade setaceous, glabrous; inflorescence a contracted panicle.

An African genus of 4 species; 1 species in South Africa, recorded from the northern Transvaal and Natal. (Type: *C. abyssinicus* Hochst.)

281 **100. MICROCHLOA** R. Br., *Prodr. Fl. Nov. Holl.*, p. 208 (1810)
(Excluding *M. altera* var. *nelsonii* of the Fl. Cap.)

Spikelets solitary, sessile, not falling entire. *Flower* 1. *Glumes* persistent or, particularly the upper, deciduous, equal, sometimes slightly dissimilar, enclosing the valve or valves, keeled, membranous, glabrous; lower glume lanceolate or linear-oblong, acute or obtuse, somewhat gibbous at the base; upper lanceolate, acute. *Valve* lanceolate or ovate, 3-nerved, membranous or hyaline, densely ciliate on the margins and midrib, subtending a pale and a bisexual flower. *Pale* almost equalling or slightly shorter than the valve, hyaline, pilose. *Lodicules* 2, cuneate, glabrous, thin, faintly nerved. *Stamens* 3. *Ovary* glabrous; styles distinct, plumose above, laterally exserted. *Grain* oblong in outline, embraced by the unchanged valve and pale; embryo $\frac{1}{4}$ — $\frac{1}{2}$ the length of the grain.

Tufted perennials, rarely annuals; culm smooth, glabrous; basal leaf-sheaths sometimes breaking up into fibres; upper leaf-sheath striate, glabrous; ligule reduced to a minutely ciliolate rim; blade longitudinally folded and setaceous, more rarely flat with a cartilaginous band on each margin, ribbed, glabrous; inflorescence a solitary somewhat falcate spike; rhachis flattened, ciliate.

Species few, natives of tropical countries; 2 species in South Africa, distributed from the Transvaal, Swaziland, Natal, Basutoland, the Orange Free State, and through the coastal area to the south-western Cape Province; also recorded from the Graaff Reinet, Queenstown, and Albany districts. (Type: *M. setacea* R. B. = *M. indica* (L.) Beauv.)

281a **101. RENDLIA** Chiov., in *Ann. Bot. Roma*, vol. 12, p. 53 (1914)
(*Microchloa altera* var. *nelsonii* of Fl. Cap.)

Spikelets solitary, sessile, not falling entire. *Flowers* 1—2. *Glumes* persistent, enclosing the valves, equal, subsimilar, membranous; lower glume lanceolate,

obtuse, somewhat saccate at the base, keeled, deeply concave, 1-nerved, glabrous; upper glume rounded on the back, 1-nerved, glabrous. *Valves* 2; lower valve ovate-lanceolate, 2-lobed, keeled, 3-nerved, densely ciliate on the nerves and margins, subtending a pale and a bisexual flower. *Pale* lanceolate, 2-lobed or truncate, 2-keeled, deeply channelled between the keels. *Lodicules* 2, sometimes almost obsolete. *Stamens* 3. *Ovary* obovoid; styles free, plumose above. *Upper valve* lanceolate, 2-lobed, glabrous, subtending a pale only or also a male flower. *Pale* lanceolate, hyaline, sometimes reduced or quite suppressed.

Perennials, densely caespitose; culm erect, 8—10 inches high, few-noded, smooth, glabrous or woolly; leaf-sheath shorter than the internode of the culm, finely ribbed, glabrous or sparsely pilose, breaking up into fibres at the base; ligule ciliate; blade setaceous, finely striate, glabrous; inflorescence a solitary terminal spike, with the spikelets all on the face of the rachis; rachis convex on the back, flat on the face, with membranous ciliate margins.

An African genus of 5 species; 1 species in South Africa, found in the Transvaal, Swaziland, and Natal. (Type: *R. obtusifolia* Chiov.)

281b 102. CATALEPIS Stapf & Stent, Kew Bull., p. 11 (1929)

Spikelets solitary, sessile or subsessile, 4—5 grouped in an abbreviated raceme on the central rachis, falling entire. *Flower* 1. *Glumes* very unequal; lower glume reduced to a linear scale; upper glume linear-lanceolate, subacuminate, keeled, deeply concave, scabrid on the keel, 1-nerved, glabrous. *Valve* 1, as long as the upper glume, linear-lanceolate, subacuminate, deeply concave, scabrid on the keel, with a few hairs on either side. *Pale* about as long as the valve, linear-lanceolate, obtuse, 2-keeled, grooved between the keels, glabrous. *Rhachilla* slightly produced beyond the pale. *Lodicules* 2, cuneate. *Stamens* 3. *Ovary* ellipsoid; styles distinct, very delicate, plumose above, terminally exserted.

A caespitose perennial, 4—15 inches high; culm striate, glabrous; leaf-sheath shorter than the internode of the culm, ribbed, glabrous; ligule pilose; blade setaceous, finely ribbed, glabrous; inflorescence a number of short racemes on a central rachis, the whole forming a spike-like structure.

Endemic; species 1, recorded from the Ermelo and Standerton districts in the Transvaal, Vrede in the Orange Free State, the Barkly East district, and Basutoland. (Type: *C. gracilis* Stapf & Stent)

282 103. CYNODON Rich., ex Pers. Syn. Pl., vol. 1, p. 85 (1805)

Spikelets solitary, sessile, not falling entire; rhachilla sometimes produced. *Flower* 1. *Glumes* equal or unequal, lanceolate or boat-shaped, acute, keeled, sometimes scabrid on the keel; upper glume usually deciduous; lower glume subsistent. *Valve* 1, very rarely a second reduced valve present, ovate, ovate-lanceolate, or elliptic-lanceolate, obtuse, keeled, ciliate on the keel, membranous, subtending a pale and a bisexual flower. *Pale* as long as or somewhat shorter than the valve, oblong-linear, obtuse or subacute, membranous. *Lodicules* 2, minute, glabrous. *Stamens* 3. *Ovary* glabrous; styles distinct, plumose above. *Grain* oblong in outline; embryo about $\frac{1}{3}$ as long as the grain.

Creeping perennials, rooting at the nodes; culm smooth, glabrous; ligule ciliate; blade linear, closely ribbed, with a distinct midrib; inflorescence of 2—7 narrow spikes arranged digitately at the end of the culm, very rarely only 1 spike present; rachis keeled; spikelets unilateral in 2 rows on the rachis.

Species 9—12, natives of warm climates of both hemispheres; 7 species in South Africa with a wide distribution. (Type: *C. dactylon* Rich.)

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104. *SPARTINA* Schreber, Gen. vol. 1, p. 43 (1789)

Spikelets solitary, subsessile, falling entire. *Flower* 1. *Glumes* unequal, dissimilar, 1—5-nerved, keeled; lower glume linear, acute or obtuse, ciliate on the keel, membranous; upper glume shorter than the valve, narrow-linear, membranous or subcoriaceous, pubescent. *Valve* oblong, 1-nerved, thinly membranous, subtending a pale and the bisexual flower. *Pale* similar to its valve in shape, 2-nerved, delicate in texture. *Lodicules* 0. *Stamens* 3. *Ovary* glabrous; styles very long, connate at the base, plumose above. *Grain* linear or oblong in outline, included in the valve and pale.

Rigid maritime grasses, usually tall and coarse, with tufted or creeping bases; culm glabrous; leaf-sheath longer than the internode of the culm, ribbed, glabrous; ligule a minute line of hairs; blade scarcely ribbed, folded, awl-shaped, rigid; inflorescence of 2—3 spikes from the apex of the culm, rarely of a single spike; rhachis prominently keeled on the face, flattened on the back; spikelets 2-ranked on the rhachis.

Species 7—8, natives of North and South America, the Island of Tristan da Cunha, and the coast of Europe and Africa; 1 species in South Africa confined to the sea-shore. (Type: *S. schreberi* Gmel.)

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105. *HARPECHLOA* Kunth, Rev. Gram., vol. 1, p. 92 (1829)

Spikelets solitary, sessile, not falling entire. *Flowers* 3. *Glumes* unequal and dissimilar, membranous or subcoriaceous; lower glume less than half as long as the upper, ovate or lanceolate, subacute or obtuse, 1-nerved; upper glume almost as long as the valves, boat-shaped, somewhat falcate, 3-keeled, scabrid on the keels. *Valves* 3 or 4, dissimilar; lowest valve sharply folded along the keel, elliptic or elliptic-oblong, obtuse, long-ciliate on the margins and keel, membranous, subtending a pale and a bisexual flower. *Pale* shorter than its valve, lanceolate, 2-keeled, membranous. *Upper valves* decreasing in size, obovate or spatulate, rounded or almost truncate above, with 2 marginal nerves, not ciliate, glabrous; the 2 lower each subtending a pale and a male flower; the uppermost, when present, empty. *Pales* equalling or slightly longer than their respective valves, lanceolate or linear-lanceolate. *Lodicules* cuneate, fleshy, narrowly 2-winged. *Stamens* 3. *Ovary* glabrous; styles distinct, plumose above, laterally exserted. *Grain* free, oblong in outline, embraced by the unchanged valve and pale; embryo $\frac{1}{2}$ the length of the grain.

A tufted perennial; culm ribbed, glabrous; leaf-sheath ribbed, glabrous; ligule a minute line of hairs; blade stiff, folded, ribbed, smooth, glabrous.

Endemic; species 1, distributed from the Transvaal, Natal, Basutoland, the Orange Free State, and through the coastal area to the Swellendam district; also recorded from the Graaff Reinet, Queenstown, and Somerset East districts. (Type: *H. capensis* Kunth = *H. falax* (Linn. f.) O. Kuntze)

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106. *CTENIUM* Panz., Denkschr. Baier Akad. Wiss. München, vol. 4, p. 288, pl. 13 (1813)

Spikelets solitary, sessile, not falling entire. *Flowers* 2. *Glumes* unequal; lower glume persistent, about $\frac{1}{2}$ as long as the upper, lanceolate, acuminate, acute, 1-nerved, keeled, tubercled on the keel, membranous; upper glume longer than the valves, lanceolate, acuminate, 2—3-nerved, tubercled on the nerves, with an awn from the middle of the back and almost at right angles to the body of the glume; awn slightly shorter than the glume, scabrid. *Valves* 4, dissimilar. *Lowermost valve* elliptic, awned from the back, long-ciliate, membranous, subtending a pale but no flower. *Second valve* ovate or ovate-lanceolate, awned from just behind the tip,

long-ciliate, membranous, subtending a pale and a male flower. *Third and fourth valves* similar to the second valve, but the former subtending a bisexual flower and the latter without a flower. *Pales* of all the valves shorter than their respective valves, 2-keeled or 2-nerved. *Lodicules* 2, quadrate-cuneate or ovate, delicate, faintly nerved. *Stamens* 3 in the bisexual flower and 2 in the male flower. *Ovary* glabrous; styles distinct, plumose above, laterally exserted. *Grain* free, embraced by the unchanged valve and pale; embryo $\frac{1}{2}$ the length of the grain.

Tufted perennials; culm ribbed, minutely pubescent; leaf-blade folded, more rarely flat, ribbed, rough; ligule a membranous fringe; inflorescence a solitary terminal often strongly falcate unilateral spike; spikelets in 2 rows on the rhachis and at an angle of 45 degrees to the rhachis; rhachis flat above, convex beneath.

Species about 9, natives of North and South America, and Africa; 1 species in South Africa, recorded from the Transvaal, Zululand, Natal, and Pondoland. (Type: *C. carolineanum* Panzer = *C. aromaticum* (Walt.) Hitchc.)

287 107. ENTEROPOGON Nees, in Lindl. Nat. Syst., ed. 2, p. 448 (1863)

Spikelets solitary, sessile, not falling entire. *Flower* 1. *Glumes* persistent, unequal; lower glume about $\frac{1}{2}$ the length of the upper, lanceolate, acuminate, acute, produced into a short awn, 1-nerved, membranous; upper lanceolate, 1-nerved, produced into an awn, membranous; awn about $\frac{1}{2}$ as long as the body of the glume. *Valves* 3; lowermost lanceolate, 2-lobed, awned from the sinus, 3-nerved, membranous, subtending a pale and the bisexual flower; awn about twice as long as the body of the valve. *Rhachilla* produced beyond the valve, tufted at the apex. *Pale* lanceolate, shortly 2-lobed, 2-keeled, concave between the keels, minutely ciliolate on the keels above. *Lodicules* 0. *Ovary* oblong in outline, glabrous; styles distinct, plumose above, laterally exserted. *Second valve* similar to the lowest but smaller and subtending a pale only; uppermost valve reduced to an awn. *Grain* not seen.

Perennials; culm smooth, striate, glabrous; leaf-sheath shorter than the internode of the culm, ribbed, glabrous; ligule a fringe of long hairs; blade long narrow-linear, folded, ribbed, glabrous; inflorescence a solitary long narrow spike at the end of the culm.

Species about 10, natives of Africa, Madagascar, India, and the Seychelles; 1 species in South Africa, recorded from the northern Transvaal. (Type: *E. melicoides* Nees)

288 108. CHLORIS Swartz, Prodr. Veg. Ind. Occ., p. 25 (1788)

Spikelets solitary, sessile, not falling entire. *Flowers* 1—3. *Glumes* persistent, unequal, linear, membranous; lower glume about $\frac{1}{2}$ as long as the upper; upper as long as the valves, 2-lobed, mucronate from the sinus or the keel passing into a short acumen. *Valves* 2—4, dissimilar. *Lower or lowermost valve* obovate-acuminate or lanceolate, folded, awned below the tip, with a tuft of long-cilia on the upper portion or scantily ciliate, membranous or chartaceous, subtending a pale and a bisexual flower; awn slightly shorter than to 4 times as long as the body of the valve. *Pale* as long as its valve, linear to obovate-linear, 2-keeled, hyaline. *Second valve* spatulate or obovate, truncate, awned, membranous or chartaceous, glabrous, empty or subtending a pale and either a male or a bisexual flower; awn shorter than or 3—5 times as long as the body of the valve. *Third and fourth valves* (when present) empty; the upper often reduced to little more than an awn. *Lodicules* 2, minute. *Stamens* 3. *Ovary* glabrous; styles

distinct, plumose above. *Grain* narrow-ovate in outline; pericarp very thinly and delicately hyaline, loose, swelling slightly in water; embryo rather large.

Perennials; culm ribbed, glabrous; leaf-sheath shorter than the internodes of the culm, ribbed, glabrous; ligule membranous or a row of cilia; blade flat, ribbed, with a prominent midrib, smooth or scabrid, glabrous or rarely with long hairs from bulbous bases; inflorescence of 8—20 linear spikes arranged digitately at the end of the culm.

Species about 9, natives of North and South America, and Africa; 4 species in South Africa, widely distributed but absent from the south-western districts of the Cape Province, reaches the East London district in the east. (Type: *C. cruciata* Swt.)

288a 109. EUSTACHYS Desv., *Nouv. Bull. Soc. Philom.*, Paris, vol. 2, p. 188 (1810)

(*Chloris petraea* Thunb., of the Fl. Cap.)

Spikelets solitary, sessile, not falling entire; rachilla produced beyond the upper valve. *Flowers* 1—2. *Glumes* persistent, unequal, membranous, glabrous; lower glume boat-shaped, obliquely ovate, obtuse; upper glume more or less boat-shaped, elliptic, keeled, awned from below the tip; awn shorter than, to $\frac{1}{2}$ as long as, the body of the glume. *Valves* 2, dissimilar, 3-nerved; lower valve broadly elliptic, ovate, or elliptic-oblong, obtuse, awned from below the tip, long-ciliate on the margins and nerves, subtending a pale and a bisexual flower; awn $\frac{1}{4}$ — $\frac{1}{2}$ as long as the body of the valve. *Pale* about the same length as the valve, oblanceolate, 2-keeled, of the same texture or thinner. *Lodicules* 2, minute. *Stamens* 3. *Ovary* glabrous; style distinct, plumose above. *Grain* narrow-ovate in outline; pericarp very thin and hyaline, loose, swelling slightly in water; embryo large. *Upper valve* almost obcordate, shortly awned, subtending a pale and a male flower or a pale only; awn shorter than the body of the valve, hyaline.

Perennials; culm simple or branched, somewhat compressed, ribbed, glabrous; leaf-sheath usually strongly compressed, prominently ribbed, sometimes scabrid on the keel, glabrous or the lowermost sometimes densely pilose; ligule a ciliate rim; blade longitudinally folded, keeled, closely ribbed, scabrid, ciliate at the junction with the sheath; inflorescence of 3—8 spikes arranged digitately at the end of the culm; spikelets arranged unilaterally in 2 rows on the rachis.

Species 5—6, mostly American; 1 species in South Africa, with a wide distribution. (Type: *E. petraea* (Thunb.) Desv.)

293 110. WILLKOMMIA Hack., ex Schinz in *Verh. Bot. Ver. Brand.*, vol. 30, p. 145 (1888)

Spikelets solitary, sessile, not falling entire. *Flower* 1. *Glumes* persistent, unequal, dissimilar; lower glume smaller than the upper, lanceolate, 2-fid or truncate at the apex, nerveless, hyaline; upper glume lanceolate, subacute, rounded on the back, concave on the face, 1-nerved, sometimes minutely scabrid on the back. *Valve* 1, lanceolate, shortly 2-lobed, awned from the sinus, ciliate on the margins and nerves, hyaline; awn about $\frac{3}{4}$ as long as the body of the valve. *Pale* about as long as the valve, lanceolate, truncate, sometimes minutely 3-toothed, 2-keeled, pilose on the keel and at the base, hyaline. *Lodicules* 2, cuneate. *Stamens* 3. *Ovary* ellipsoid; styles connate at the base, plumose on the upper portion. *Grain* oblong in outline; embryo about $\frac{1}{2}$ as long as the grain.

Annuals or perennials, erect or creeping and rooting at the nodes; culm smooth, glabrous; leaf-sheath shorter than the internode of the culm, finely ribbed, glabrous or with scattered long hairs from a bulbous base; ligule ciliate; blade

linear, flat or rolled, ciliate with long hairs from a bulbous base; inflorescence of spikes arranged along a central axis; rhachis more or less flat on the back, keeled on the face; spikelets 2-ranked.

Species 4, African, with 1 species in North and South Africa; 3 species recorded from South West Africa. (Type: *W. sarmentosa* Hack.)

298 111. TRIPOGON Roem. & Schult., Syst. Veg., vol. 2, pp. 34, 600 (1817)

Spikelets solitary, sessile, not falling entire. *Flowers* several, bisexual or the upper male. *Glumes* persistent, unequal, dissimilar, shorter than the valves, 1-nerved, keeled, membranous, glabrous; lower glume about $\frac{1}{2}$ as long as the upper, usually with one margin deeply notched or dilated suddenly below the middle into a lobe or wing or segment; upper glume entire or notched below the mucronate or apiculate tip. *Valves* about 7, lanceolate, bifid or 4-fid at the apex, awned from the sinus and also sometimes the lobes awned, membranous, glabrous; lower valves each subtending a pale and a bisexual flower; upper valves subtending a pale and a male flower or without a flower. *Pale* shorter than their respective valves, broad or narrow, 2-toothed or 2-mucronate. *Stamens* 3. *Styles* very short, distinct. *Grain* terete or subterete, glabrous.

Small annuals or perennials; culm smooth, glabrous; leaf-sheath glabrous; ligule delicately hyaline, fimbriate or ciliate; blade narrow, longitudinally folded, scantily pilose; inflorescence a terminal solitary, often curved, spike.

Species about 8, natives of Africa and India; 2 species in South Africa, recorded from the Transvaal. (Type: *T. bromoides* R. & S.)

299 112. TETRAPOGON Desf., Fl., Atlant., vol. 2, p. 388, t. 255 (1799)

Spikelets solitary, sessile, not falling entire. *Flower* 1. *Glumes* persistent, unequal, similar, lanceolate, acute or obtuse, 1-nerved, membranous, glabrous; lower glume smaller than the upper. *Valves* 2, dissimilar; lower valve elliptic, shortly 2-lobed, awned from the back near the tip; 3-nerved, long ciliate on the nerves, membranous, subtended by a pale and a bisexual flower; awn slightly longer than the body of the glume. *Pale* elliptic, shortly 2-lobed, 2-keeled, concave between the keels, ciliate on the keels. *Lodicules* 2, more or less oblong, subfleshy. *Stamens* 3. *Ovary* oblong in outline, glabrous; styles distinct, plumose above, laterally exserted. *Upper valve* obovate, almost truncate, shortly 2-lobed, deeply concave, membranous, 5-nerved, with an awn from the back near the tip, empty; awn about twice as long as the body of the valve. *Grain* not seen.

Perennials; culm sometimes branched from the nodes, ribbed, glabrous; leaf-sheath shorter than the internode of the culm, finely ribbed, glabrous; ligule a narrow membranous rim; blade flat, narrow-linear, finely veined, with a very distinct midrib, glabrous, scabrid on the margins; inflorescence of 3—5 spikes arranged digitately at the end of the culm.

Species about 10, natives of Africa and western Asia; 1 species in South Africa, recorded from Barberton in the Transvaal and from Swaziland. (Type: *T. villosus* Desf.)

300a 113. LINTONIA Stapf, Hook. Ic. Pl., t. 2949 (1911)

Spikelets solitary, shortly peduncled, not falling entire. *Flowers* 3—7. *Glumes* persistent, unequal, subsimilar, 1-nerved, membranous, glabrous; lower glume shorter than the upper, lanceolate, obtuse, somewhat keeled; upper glume oblong, notched at the apex, somewhat keeled. *Valves* 4—10, similar, obovate, shortly 2-lobed, shortly ciliate above, with a short awn

from the back near the tip, broadly 5—9-nerved, hirsute on the back; the lower valve subtending a pale and a bisexual flower; the upper 2—3 valves empty or scarcely hirsute. *Pale* elliptic-lanceolate, shortly 2-lobed, flat on the back, 2-keeled, ciliate on the keels. *Lodicules* 2, oblong. *Stamens* 3. *Ovary* shortly stalked, oblong in outline, glabrous; style joined at the base, plumose above, laterally exserted. *Grain* oblong in outline; embryo about $\frac{1}{2}$ the length of the grain.

Perennials; culm striate, glabrous; leaf-sheath longer than the internode of the culm, ribbed, glabrous; ligule scarious; blade flat, narrow-linear, with scarcely a distinct midrib, finely ribbed, rough to the touch; inflorescence of 2—5 spike-like racemes, arranged digitately at the end of the culm; rhachis narrow, zigzag, sparsely setose on the margins.

An African genus of 2 species, one of which is recorded from Bechuanaland, the Transvaal, and Natal. (Type: *L. nutans* Stapf)

301 114. TETRACHNE Nees, Fl. Afr. Austr., p. 375 (1841)

Spikelets solitary, sessile, falling entire. *Flowers* 2—4. *Glumes* unequal, shorter than the valves, ovate-lanceolate, acute, 1-nerved, membranous, glabrous. *Valves* 4—6, all similar, ovate-lanceolate, acute or subobtusely keeled, ciliate on the keel, membranous, glabrous. *Lower* (or *lowest*) 2 *valves* empty, very like the glumes. *Upper valves* 5-nerved, each subtending a pale and a bisexual flower, or the upper subtending a pale and a male flower, or a pale only. *Pales* equalling or subequalling their respective valves and somewhat similar to them, 2-keeled and winged on the keels.

A tufted perennial; culm smooth, glabrous; leaf-sheath shorter than the internode of the culm, ribbed, glabrous; ligule a fringe of minute hairs; blade stiff, ribbed, glabrous; inflorescence of short spikes, arranged alternately on the main rhachis; rhachis flattened; spikelets arranged unilaterally in 2 rows on the rhachis.

Endemic; species 1, recorded from the Albert, Aliwal North, Colesberg, Graaff Reinet, Hopetown, Murraysburg, and the Queenstown districts; also recorded from Basutoland. (Type: *T. dregei* Nees)

301a 115. ENTOPLOCAMIA Stapf, Fl. Cap., vol. 7, p. 318 (1898)

Spikelets solitary or clustered, sessile or subsessile, falling entire. *Flowers* few up to 20. *Glumes* unequal, ovate, acuminate, membranous, glabrous; lower glume 3-nerved; upper glume 5-nerved. *Valves* few up to 20, exserted from the glumes, ovate, pungent-mucronate, keeled, ciliate on the keel, prominently 9—11 nerved, membranous, glabrous. *Lowest* 2 *valves* empty, more or less similar to the glumes. *Upper valves* each subtending a pale and a bisexual flower. *Uppermost valves* each subtending a pale and a male flower or subtending a pale only. *Pales* as long as the valves, shortly 2-lobed, 2-keeled, with the keels winged, ciliate on the back, woolly at the base. *Lodicules* 0. *Ovary* glabrous; styles connate at the very base, plumose above, terminally exserted. *Grain* loosely enclosed by the valve and pale; pericarp thin, loose; embryo $\frac{1}{2}$ as long as the grain, or less.

Perennials; culm ribbed, glabrous; leaf-sheath shorter than the internode of the culm; ligule a dense fringe of short hairs; blade flat, linear, prominently ribbed, with a distinct midrib, rough or smooth, glabrous or with a few scattered long hairs; inflorescence of spikelets on a main rhachis, more rarely the spikelets on very abbreviated branches of the main rhachis.

An African genus of 2 species, one of which occurs in South West Africa and Namaqualand. (Type: *E. aristulata* (Hack. & Rendle) Stapf)

NOTE.—Stapf first published the name in the *Flora Capensis* in the key to the grasses (1898), but his description of the genus and a species was published in 1900 (*Fl. Cap.*, p. 710); between these two dates, viz. 1899, Rendle (*Cat. Welw. Afr. Pl.*, vol. 2, pt. 1, p. 228) described another species of the genus. He knew of Stapf's new combination *Entoplocamia aristulata* (Hack. & Rendle) Stapf, which should be the type species of the genus rather than *Entoplocamia benguelensis* Rendle, even though it was published a year earlier.—E. P. P.

302 116. DINEBRA Jacq., *Fragm.*, p. 77, pl. 121, f. 1 (1809)

Spikelets solitary, sessile, not falling entire. *Flowers* 2—3. *Glumes* persistent, subequal, longer than the valves, lanceolate, long-acuminate, 1-nerved, keeled, scabrid on the keel, glabrous. *Valves* 2—3, lanceolate, acute, 3-nerved, keeled, membranous, glabrous, each subtending a pale and a bisexual flower. *Pales* as long as the valves, 2-toothed, 2-keeled, membranous or hyaline. *Lodicules* 2. *Stamens* 3. *Styles* distinct, short. *Grain* ovoid-triquetrous, included in the valve and pale; embryo small.

Annuals; culm smooth, glabrous; leaf-sheath shorter than the internode of the culm, ribbed, minutely tubercled, glabrous; ligule scarious; blade flat, linear, with or without a distinct midrib, glabrous; inflorescence of very compact spikes, arranged on a main rhachis, the whole sometimes compact and almost spike-like (the compact spikes may be mistaken for a single many-flowered spikelet unless carefully examined).

Species 2—3, Africa and India; 1 species in South Africa, found in the Transvaal and in Bechuanaland. (Type: *D. retroflexa* (Vahl) Panz. = *D. arabica* Jacq.)

304 117. ELEUSINE Gaertn., *Fruct. & Sem.*, vol. 1, p. 7, pl. 1, f. 11 (1788)

Spikelets solitary, sessile, not falling entire. *Flowers* 3—6. *Glumes* persistent, unequal, keeled, scabrid on the keels, 3—5-nerved, herbaceous, with membranous margins, glabrous; lower half as long as the upper, narrowly winged on the keel. *Valves* 3—6, exserted from the glumes, similar, resembling the upper glume, 3-nerved near the base, each subtending a pale and a bisexual flower. *Pales* slightly shorter than their respective valves, notched at the apex, 2-keeled, with the keels winged. *Lodicules* 2, minute, cuneate. *Stamens* 3. *Ovary* glabrous; styles slender from a broadened base, distinct, plumose above, laterally exserted. *Grain* globose or broadly oblong in outline; pericarp loose, delicate, breaking up irregularly or almost circumscissile; seed finely striate; embryo suborbicular.

Annuals; culm simple or branched, somewhat compressed, ribbed, glabrous; leaf-sheath longer or shorter than the internode of the culm, compressed, strongly ribbed, glabrous or with a few scattered hairs; ligule membranous; blade flat or longitudinally folded, linear, closely ribbed, with a distinct midrib, smooth, glabrous or with a few scattered long hairs; inflorescence of 3—12 spikes arranged digitately or subdigitately at the end of the culm; spikelets crowded and unilateral on the flattened rhachis of the spikes.

Species about 6, natives of Africa and Asia; 2 species in South Africa, one as a naturalized weed and widely distributed, the other cultivated. (Type: *E. coracana* Gaertn.)

304a 118. ACRACHNE Wight & Arn., in *Lindl. Nat. Syst.*, ed. 2, p. 381 (1836)

Spikelets solitary, sessile, not falling entire. *Flowers* 8. *Glumes* persistent, unequal, subsimilar; lower glume smaller than the upper, ovate-lanceolate, deeply concave, produced into a short awn, 1-nerved, keeled, scabrid on the keel, membranous, glabrous; upper glume elliptic, otherwise similar to the lower. *Valves* 8, all similar but slightly decreasing in size upwards, ovate, deeply concave, shortly 2-lobed, keeled, with the keel scabrid above and produced into a short mucro, 3-nerved, membranous, glabrous. *Pale* as long as the valve, lanceolate, 2-keeled, deeply channelled between the keels, shortly ciliate on the keels. *Lodicules* 2, small, cuneate. *Stamens* 3. *Ovary* ellipsoid; styles distinct, plumose above, laterally exserted. *Grain* loose within the pericarp.

Annual; culm finely striate, smooth, glabrous; leaf-sheath shorter than the internode of the culm, ribbed, glabrous; ligule scarious, fimbriate; blade broadly linear, flat, finely ribbed, without a distinct midrib, with scabrid margins, glabrous; inflorescence of 5—6 narrow spikes arranged subdigitately at the end of the culm; rachis narrow; spikelets unilateral.

Species 1(?), native of Africa and India; recorded from the northern Transvaal in South Africa. (Type: *A. verticillata* (Roxb.) Chiov.)

NOTE.—Subsequent to writing the descriptions, I found that Mr. C. E. Hubbard, of Kew, proposes to sink this genus under *Eleusine* as was done, e.g. by Dalla Torre & Harms. As it was too late to make the alteration in the MSS., this note will have to suffice.—E. P.

305 119. DACTYLOCTENIUM Willd., Enum. Pl., p. 1029 (1809)

Spikelets solitary, sessile, not falling entire. *Flowers* 2—4. *Glumes* dissimilar subequal, membranous, glabrous; lower glume persistent, boat-shaped, sometimes shortly acuminate, keeled, ciliate on the keel; upper glume deciduous, oblong, with an awn from the back of the tip; awn erect or somewhat spreading, $1\frac{1}{2}$ times as long as the body of the glume, scabrid. *Valves* 3—5, similar, decreasing in size upwards, exerted from the glumes, ovate, much compressed, shortly mucronate, sometimes long-acuminate, keeled, membranous; the lower valves each subtending a pale and a bisexual flower; the uppermost empty. *Pales* shorter than their respective valves, ovate-lanceolate or oblong-lanceolate, 2-keeled, deeply concave between the keels, ciliate on the keels, membranous. *Lodicules* 2, minute, hyaline. *Stamens* 3. *Ovary* glabrous; styles distinct, plumose above, subterminally exerted. *Grain* subglobose, rugose or punctate; pericarp very delicate, irregularly breaking away; embryo scarcely equalling $\frac{1}{2}$ the length of the grain.

Annuals, sometimes stoloniferous and rooting at the nodes; culm simple or branched, striate, glabrous; leaf-sheath striate, glabrous; ligule membranous; blade flat, linear, distinctly ribbed, with a distinct midrib, ciliate with tubercle-based hairs, glabrous or pilose with tubercle-based hairs; inflorescence of 3—4 spikes, arranged digitately or subdigitately at the end of the culm; spikelets crowded and unilateral on the rachis.

Species 4 or 5, widely distributed; 4 species in South Africa, extending from the Transvaal and Natal through the coastal belt to the East London district; also recorded from the Cradock district. (Type: *D. aegyptiacum* Willd. = *D. aegyptium* (L.) Richt.)

307a 120. CYPHOLEPIS Chiov., in Ann. Instit. Bot. Roma, vol. 8, p. 357 (1908)

Spikelets solitary, shortly peduncled, not falling entire. *Flowers* 7. *Glumes* persistent, equal, similar, lanceolate, obtuse, keeled, minutely scabrid on the keel, deeply concave, 1-nerved, membranous, glabrous. *Valves* 7, decreasing in size upwards, ovate, deeply concave, subacute, 3-nerved, membranous, finely pilose on the back; the lower valve subtending a pale and a bisexual flower; the upper valve subtending a pale and a male flower. *Pale* about $\frac{1}{2}$ as long as the valve, ovate, obtuse, flat, minutely ciliate on the margins. *Lodicules* 2, cuneate, somewhat fleshy. *Stamens* 3. *Ovary* subglobose; styles distinct, sublateral on the ovary, not plumose.

An annual; culm striate, smooth, glabrous; leaf-sheath as long as or shorter than the internode of the culm, finely nerved, glabrous; ligule scarious, fimbriate; blade long-narrow linear, finely veined, without a distinct midrib; inflorescence of long narrow spikes arranged on a central axis.

Species 1(?); 1 species in South Africa, recorded from the northern Transvaal and the Kuruman, Hay, Barkly West, and Vryburg districts. (Type: *C. yemenica* (Schweinf.) Chiov.)

309a 121. LOPHACHME Stapf in Fl. Cap., vol. 7, p. 316 (1898)

Spikelets solitary, subsessile, not falling entire. *Flowers* 2. *Glumes* persistent, subequal, linear, 1-nerved, keeled, membranous, glabrous. *Valves* 5—6, dissimilar. *Two lowest valves* linear, shortly 2-lobed, awned from the sinus, membranous, pilose, each subtending a pale and a bisexual flower; awn from slightly longer than, to twice as long as, the valve. *Pales* slightly shorter than the valves, linear, acute, deeply concave on the back, 2-keeled, subhyaline. *Upper valves* much reduced, more or less embracing one another, empty, passing into fine awns. *Lodicules* 2, very minute, hyaline. *Stamens* 3. *Ovary* glabrous; styles distinct, short, loosely plumose above, laterally exerted. *Grain* unknown.

A slender perennial; culm smooth, glabrous; leaf-sheath smooth or striate, glabrous; ligule a ciliate rim; blade almost setaceous; inflorescence of 2—6 spikes, arranged digitately or subdigitately at the end of the culm; spikelets somewhat distant on the rhachis.

Endemic; species 1, recorded from the Transvaal. (Type: *L. digitata* Stapf)

NOTE.—A description of the genus is given on p. 647 of the *Flora Capensis*.—E. P. P.

310 122. ENNEAPOGON Desv., in Beauv. Ess. Agrost., p. 81, pl. 16, f. 11 (1812)

Spikelets solitary, sessile or peduncled or 2-nate with both spikelets peduncled or 1 subsessile and the other shortly peduncled, not falling entire. *Glumes* persistent, similar, equal or subequal, lanceolate, distinctly 3—5- or sub-7-nerved, sometimes ciliate on the nerves, membranous, frequently pilose; upper glume as long as the valves. *Valves* 3, dissimilar, 7—9-awned, 9-nerved, membranous; awns $1\frac{1}{2}$ times as long as the body of the valve, plumose, ciliate, or scaberrulous. *Lowest valve* oblong or obovate-elliptic, pilose, subtending a pale and a bisexual flower. *Pale* linear or lanceolate, sometimes ciliate on the keels, hyaline. *Middle valve* similar to the lowest valve, but glabrous, subtending a pale and a male flower or subtending a pale only. *Uppermost valve* reduced to a tuft of minute awns. *Lodicules* 2, minute, fleshy. *Stamens* 3. *Ovary* glabrous; styles distinct, loosely plumose, laterally exerted. *Grain* oblong in outline; embryo large.

Perennials; culm striate, pubescent or glabrous; leaf-sheath ribbed, glabrous or pubescent; ligule ciliate; blade setaceous, rolled or flat, with a distinct midrib, smooth or scabrid, glabrous or pilose; inflorescence a spike-like raceme or panicle, or a much-contracted panicle; main rhachis pubescent or pilose.

Species about 7, natives of the warm dry regions of the Old World; 6 species in South Africa, recorded from the Transvaal, Basutoland, the Orange Free State, several of the north-western and central districts of the Cape Province; also from the Uitenhage and Knysna districts and South West Africa. (Type: *E. desvauxii* Beauv.)

312 123. SCHMIDTIA Steud., in J. A. Schmidt Beitr. Fl. Cap-Verd. Ins., p. 144 (1852)

Spikelets solitary, shortly peduncled, not falling entire; peduncle terete, pubescent. *Glumes* persistent, equal or subequal, similar, lanceolate, sometimes very shortly mucronate, distinctly 9—11-nerved, membranous, glabrous or pilose or pubescent. *Valves* 6—9, similar, decreasing in size upwards, elliptic or obovate, 4—6-lobed, with an awn from each sinus, 9-nerved, membranous, villous; awns about as long as, rarely much shorter than, the body of the valve, scabrid. *Lower valves* each subtending a pale and a bisexual flower. *Middle valves* each subtending a pale and a male flower. *Uppermost valves* empty. *Pales* slightly shorter than their valves, obovate or

oblanceolate, sometimes shortly acuminate, ciliate, membranous, pilose. *Lodicules* 2, minute, fleshy. *Stamens* 3. *Ovary* glabrous; styles distinct, loosely plumose, laterally exserted. *Grain* oblong in outline; embryo large.

Annuals or perennials, more or less glandular-pubescent; leaf-sheath ribbed, densely villous; ligule long-ciliate; blade flat, linear, tapering to a point, prominently ribbed, with a distinct midrib, sometimes scabrid on the margins, softly villous, more rarely glabrous; inflorescence a more or less compact panicle; main rhachis densely pilose.

An African genus of 4—5 species; 2 species in South Africa, found in the Transvaal, the Orange Free State, several of the north-western districts, and South West Africa; also recorded from the Victoria East district. (Type: *S. pappophoroides* Steud.)

317 124. TRIRAPHIS R. Br., Prodr., Fl. Nov. Holl., p. 185 (1810)

Spikelets solitary or sometimes 2-nate, peduncled, not falling entire. *Flowers* 5—11. *Glumes* persistent, subequal, lanceolate or linear, acute, sometimes mucronate, 1-nerved, membranous to almost hyaline. *Valves* 5—12, much exserted from the glumes, lanceolate or linear-oblong, 2-lobed, with the lobes sometimes bristle-like, 3-awned, 3-nerved, keeled, membranous, villous, subtending a pale and a bisexual flower, or the uppermost empty; awns scabrid, with the central awn $\frac{1}{2}$ — $1\frac{1}{2}$ times as long as the body of the valve; lateral awns usually shorter. *Pales* somewhat shorter than their valves, linear or linear-oblong, hyaline. *Lodicules* 2, minute, delicate. *Ovary* glabrous; styles distinct, plumose above, laterally exserted. *Grain* tightly embraced by the scarcely changed valve and pale, linear in outline; embryo short.

Perennials; culm striate, glabrous; leaf-sheath shorter than the internode of the culm, striate or ribbed, glabrous or pilose with tubercule-based hairs; ligule a row of long cilia; blade folded, ribbed, with a distinct midrib, smooth, glabrous; inflorescence a somewhat contracted panicle or, more rarely, compact and spike-like.

Species 10—11, natives of Africa and Australia; 8 species in South Africa, recorded from the Transvaal, Natal, Basutoland, the Orange Free State, South West Africa, Namaqualand, and several north-western districts; also recorded from the Uitenhage district. (Type: *T. pungens* R. Br.)

323 125. UROCHLAENA Nees, Fl. Afr. Austr., p. 437 (1841)

Spikelets solitary, sessile or subsessile, not falling entire. *Flowers* few to many; spikelets at the base of the lower branches of the inflorescence 1-flowered or barren. *Glumes* persistent, subequal, ovate-oblong, rigidly aristate-acuminate, rounded on the back, 5-nerved, membranous, finely ciliate, sometimes with tubercule-based hairs; awns 2—4 times as long as the body of the glume. *Valves* similar to the glumes and subequalling them, 7-nerved, awned, with the lower valve subtending a pale and a bisexual flower and the upper valve not subtending flowers; awn about as long as the body of the valve. *Pales* subequalling the valves, linear-oblong. *Lodicules* 2, minute. *Stamens* 3. *Ovary* glabrous; styles distinct, delicately plumose, laterally exserted. *Grain* enclosed by the little-altered valve and pale, oblong in outline; embryo about $\frac{1}{2}$ the length of the grain.

Annuals, much branched from the base; culm slender, about 3-noded, smooth, disarticulating below the uppermost node; leaf-sheath smooth, striate, scantily bearded at the mouth; ligule a line of long and short hairs; blade linear, narrow, acute; inflorescence a small compact ovoid terminal panicle, embraced at the base by the uppermost leaf-sheath and deciduous with it.

Endemic; species 2, recorded from Namaqualand and the Van Rhynsdorp and Clanwilliam districts. (Type: *U. pusilla* Nees)

326 **126. FINGERHUTHIA** Nees, in Lehm. Cat. Sem. Hort. Hamb.,
p. 7 (1834)

Spikelets solitary, peduncled, falling entire; peduncle cup-shaped at the apex. *Flowers* 1—2. *Glumes* equal, similar, longer than the valves, lanceolate, awned, 1-nerved, membranous, long-villous; awn from $\frac{1}{2}$ as long to as long as the body of the glume. *Valves* 2—3. *Lower valve* or 2 *lowest valves* lanceolate or linear-oblong, shortly awned or mucronate or produced into a pungent mucro, 5—7- (rarely 3-) nerved, membranous, long-ciliate, both subtending a pale and a bisexual flower or the upper valve subtending a male flower or empty. *Pale* or pales slightly shorter than their valves, ovate-lanceolate, of a similar texture as the valves. *Upper* or *uppermost valve* unlike the other or others, smaller, empty. *Lodicules* 2, cuneate. *Stamens* 3. *Ovary* slightly constricted below the apex, glabrous; styles distinct, finely plumose above, subterminally exserted. *Grain* ovate in outline; pericarp thin, hyaline; embryo about $\frac{3}{4}$ the length of the grain.

Perennials; culm striate, glabrous; leaf-sheath shorter than the internode of the culm, striate, glabrous; ligule long-ciliate; blade flat or longitudinally folded, long-linear, tapering to a fine point, strongly ribbed, without a distinct midrib, smooth or scabrid, glabrous; inflorescence compact and spike-like, usually oblong in outline; main rhachis terete, covered with the remains of the short peduncles after the spikelets have fallen.

Endemic; species 2, widely distributed. (Type: *F. africana* Lehm.)

327 **127. ELYTROPHORUS** Beauv., Essai Agrost., p. 67 (1812)

Spikelets solitary, sessile or subsessile, not falling entire. *Flowers* 4—6. *Glumes* subequal or the upper glume somewhat longer, lanceolate to ovate-acute, sometimes aristate, 1-nerve, keeled, membranous, glabrous. *Valves* similar, ovate, more or less awned, 3—5-nerved, keeled, ciliate on the keel and margins, glabrous; lower valves subtending a pale and a bisexual flower; upper valve subtending a male flower, or sterile. *Pale* shorter than the valve, broad, variously lobed at the apex, 2-keeled, with the keels narrowly to broadly winged and with the wings entire or variously notched. *Lodicules* 1—2. *Stamens* 1—3. *Styles* free, scantily plumose. *Grain* subglobose or ovate-oblong in outline; embryo almost as long as the glume.

Annuals; culm ribbed, glabrous; leaf-sheath shorter than the internode of the culm, striate, glabrous; ligule membranous, sometimes minutely ciliate; blade narrow-linear, striate, glabrous; inflorescence spike-like, consisting of aggregated groups of spikelets arranged along a common axis; groups of spikelets sometimes distant from one another; axis glandular, pubescent.

An African genus of 4 species; 4 species in South Africa, recorded from South West Africa, Ngamiland, and Bechuanaland. (Type: *E. spicatus* (Willd.) Camus = *E. articulatus* Beauv.)

331 **128. ARUNDO** Linn., Sp. Pl., ed. 1, p. 81 (1753)

Spikelets solitary, peduncled, not falling entire. *Flowers* 4. *Glumes* persistent, equal, similar, enclosing the valves, lanceolate, acuminate, sub-obtuse, 3-nerved, membranous, glabrous. *Valves* 4, decreasing in size upwards, similar, lanceolate, acuminate, 2-lobed, with a short awn from the sinus, membranous, long-villous, each valve subtending a pale and a bisexual flower. *Pales* shorter than the valves, more or less oblong, truncate, 2-keeled, hyaline, ciliate on the keels. *Lodicules* 2. *Stamens* 3. *Styles* distinct, plumose above. *Grain* oblong in outline, enclosed by the valve and pale, glabrous; embryo large.

A robust perennial up to 15 ft. high; culm smooth, hollow, many-noded, simple or scantily branched; leaf-sheath slightly exceeding the internode of the culm, smooth; ligule short, membranous; blade up to 2 ft. long, broad, linear-lanceolate from a broad base, tapering to a very fine point, smooth; inflorescence a large contracted or effuse panicle.

Species 1, native of the Mediterranean region, Madagascar, and India; introduced into South Africa and found in the coastal districts of the Cape Province and in the northern Transvaal. (Type: *A. donax* L.)

333 129. PHRAGMITES Trin., Fund. Agrost., p. 134 (1820) partly

Spikelets solitary, peduncled, not falling entire; peduncle capillary. *Glumes* persistent, unequal or subequal, linear or lanceolate in outline, acuminate, subacute, 3-nerved, membranous, glabrous; lower glume sometimes $\frac{1}{2}$ as long as the upper and sometimes sub-5-nerved. *Valves* 3—10, similar, decreasing in size upwards, far exserted from the glumes, linear-lanceolate, long-acuminate, membranous, glabrous. *Lowermost valve* similar to the upper glume, empty. *Second valve* subtending a pale and a male flower. *Succeeding valves* each subtending a pale and a bisexual flower or the uppermost sometimes empty. *Pales* oblong, linear-oblong, or ovate-lanceolate, obtuse, much shorter than their respective valves, 2-keeled, membranous or subhyaline. *Callus* slender, silky with very long hairs. *Lodicules* 3, sometimes 2 in the lowest male flower when present. *Ovary* glabrous; style distinct, densely plumose, laterally exserted. *Grain* loosely enclosed by the valve and pale, oblong in outline; embryo about $\frac{1}{2}$ as long as the grain.

A robust perennial up to 9 ft. high, with a creeping rhizome, found in vleis and marshes; culm smooth, glabrous; leaves arising distantly on the culm; leaf-sheath completely hiding the culm, closely ribbed, glabrous; ligule a fringe of hairs; blade flat, long linear-lanceolate, somewhat leathery, closely ribbed, without a distinct midrib, glabrous; inflorescence a large villous panicle.

Species 1, a native of the temperate and subtropical regions of both hemispheres; widely distributed in South Africa wherever suitable habitats occur. (Type: *P. communis* Trin.)

337 130. DIPLACHNE Beauv., Essai Agrost., p. 80, pl. 16, f. 9 (1812) (*Bewsia* Goossens; excl. *D. paucinervis* Stapf of the Fl. Cap.)

Spikelets solitary, sessile or peduncled, not falling entire. *Flowers* 2—9. *Glumes* persistent, similar, equal or subequal, lanceolate, sometimes sub-acuminate, deeply concave, sometimes notched, 1-nerved, sometimes scabrid on the nerve, membranous; lower glume, when glumes subequal, smaller than the upper. *Valves* 2—10, similar, decreasing in size upwards, lanceolate or oblong-elliptic, more or less truncate or 2-lobed, awnless or shortly awned or mucronate from the back of the tip, sometimes the side nerves excurrent into short mucros, pilose on the back sometimes on the lower portion only, subtending a pale and a bisexual flower; the uppermost valve empty and the valve below the uppermost one with a male flower and a rudimentary ovary; awn sometimes not projecting beyond the body of the valve, sometimes scabrid. *Pale* almost as long as the valves, sometimes 2-lobed, 2-keeled, flat on the back or concave between the keels, sometimes sparsely hairy, minutely or distinctly ciliate on the keels, subhyaline. *Lodicules* 2, cuneate, fleshy. *Stamens* 3. *Ovary* glabrous; styles distinct, plumose above, laterally exserted. *Grain* enclosed by the slightly altered valve and pale, oblong or obovate in outline; embryo $\frac{1}{3}$ — $\frac{1}{2}$ the length of the grain.

Perennials; culm striate, glabrous; leaf-sheath ribbed, longer than the internode of the culm, glabrous; ligule long and membranous or reduced to a rim; blade convolute or flat, with a distinct midrib, ribbed, somewhat rough, glabrous or

scantly pilose near the base; inflorescence a more or less compact or open panicle, rachis scabrid on the margins.

Species about 12, mainly in the warmer regions of the Old World and in North America; 3 species in South Africa distributed from the Transvaal, Natal, Basutoland, the Orange Free State, and through the eastern districts to the Cape; also recorded from South West Africa and Namaqualand to the Clanwilliam district, and from the Herbert, Kimberley, Oudtshoorn, Prince Albert, Queenstown, and Somerset East districts. (Type: *D. fascicularis* Beauv.)

NOTE.—Professor A. P. Goossens (*S. Afr. Journ. Sc.*, vol. 37, p. 183 (1941)), described a genus *Bewsia* based on *Diplachne biflora* Hack. His reasons for the separation are the smaller number of valves which are awned from the back. In his description, Prof. Goossens describes the spikelets as 2—6-flowered; in *Diplachne fusca* Beauv., of which I dissected several spikelets, the spikelet is sometimes 5-flowered and may be awnless, distinctly mucronate, or shortly awned; the characters on which *Bewsia* is separated from *Diplachne* do not hold.—E. P. P.

337a 131. POGONARTHRIA Stapf, in Fl. Cap., vol. 7, p. 316 (1898)

Spikelets solitary, subsessile, not falling entire. *Flowers* 2—11. *Glumes* unequal, lanceolate, linear-lanceolate, or ovate-lanceolate, acute, 1-nerved, coriaceous, glabrous; lower almost $\frac{1}{2}$ as long as the upper. *Valves* 2—11, far exserted from the glumes, similar, decreasing in size upwards, lanceolate or ovate-lanceolate, acuminate, acute, 3-nerved, membranous, glabrous, each subtending a pale and a bisexual flower or the uppermost without a flower or with rudimentary flowers. *Pales* shorter than the valves, lanceolate or oblong-linear, acute, 2-keeled, of similar texture to the valves. *Lodicules* 2, minute; delicate. *Stamens* 3. *Ovary* glabrous; styles distinct, plumose above. *Grain* tightly embraced by the scarcely altered valve and pale, linear-oblong in outline; embryo less than $\frac{1}{2}$ the length of the grain.

Stiff perennials; culm smooth, glabrous; leaf-sheath shorter than the internode of the culm, strongly ribbed, glabrous; ligule a fringe of hairs; blade linear, closely ribbed, without a distinct midrib; inflorescence a panicle; main axis somewhat angled or ribbed, sometimes ciliate on the angles; primary spike-like branches solitary or more or less whorled on the main axis, falcate-erect; rachis more or less flattened.

Endemic; species 2, spread from the Transvaal, Zululand, Natal, Basutoland to the Orange Free State; also recorded from some of the north-western districts. (Type: *P. falcata* (Hack.) Rendle)

NOTE.—A description of the genus is given by Dr. O. Stapf in the *Flora Capensis*, p. 589 (1900).—E. P. P.

337b 132. LEPTOCARYDION Hochst., ex Benth. et Hook. fil. Gen. Pl., vol. 3, p. 1176 (1883)

Spikelets solitary, sessile or subsessile, not falling entire. *Flowers* 4—9. *Glumes* persistent, subequal, linear, subacuminate, acute, 1-nerved; lower glume sometimes smaller than the upper. *Valves* 10, far exserted from the glumes, similar, decreasing in size upwards, elliptic-lanceolate, truncate, minutely 4-toothed, 3-nerved, awned, membranous, long-ciliate; awn slender, $1\frac{1}{2}$ times as long as the body of the valve, scabrid. *Lower valves* each subtending a pale and a bisexual flower. *Upper valves* empty. *Pales* linear-lanceolate, shorter than their valves, 2-keeled, hyaline.

Annual; culm ribbed, glabrous; leaf-sheath shorter than the internode of the culm, glabrous; ligule hyaline; leaf-blade standing almost at right angles to the culm, finely ribbed, without a distinct midrib; inflorescence a more or less oblong compact silky panicle; spikelets secund in 2 rows.

Endemic; species 1, recorded from Natal. (Type: *L. vulpiastrum* (K. Schum.) Stapf)

NOTE.—Benth. et Hook. fil. regard *Leptocarydion* as a synonym of *Triodia*. Dr. O. Stapf in the *Flora Capensis*, vol. 7, p. 648 (1900), gives a description of the genus.—E. P. P.

- 337c 133. *TRICHONEURA* Anderss., in Vet. Akad. Handl.,
Stockholm, p. 148 (1853)
(*Crossotropis* Stapf)

Spikelets solitary, shortly peduncled, not falling entire. *Flowers* 3—9. *Glumes* persistent, equal, similar, exceeding the valves, linear-lanceolate, long-acuminate, acute, 1-nerved, keeled, scabrid on the keel, membranous, glabrous or glandular on the back. *Valves* 3—9, similar, decreasing in size upwards, lanceolate or lanceolate-elliptic, notched or shortly 2-lobed, mucronate or shortly awned from the sinus, 3-nerved, keeled, membranous, long-ciliate, subtending a pale and a bisexual flower; awn about 4 times shorter than the body of the valve, scabrid; the upper valves sometimes subtending a male flower and the uppermost valve empty. *Pales* subequalling their respective valves, oblong-linear or lanceolate, 2-keeled, deeply concave on the back, sometimes ciliate on the keel above. *Lodicules* 2. *Stamens* 3. *Ovary* obovoid, glabrous; styles distinct, plumose above, laterally exserted. *Grain* oblong in outline; embryo about $\frac{1}{2}$ the length of the grain.

Tufted perennials; culm smooth, glabrous; leaf-sheath ribbed, rough; ligule membranous; blade flat or longitudinally folded, scarcely ribbed, scabrid; inflorescence of spike-like racemes arranged on, and more or less at right angles to, a main axis; rhachis sub-4-angled, ciliate on the angles.

Species 4—6, found in Africa and North America; 2 species occur in South Africa and recorded from the Transvaal, Natal, the Orange Free State; also from the Albert, Aliwal North, Hay, Kimberley, Vryburg, and Queenstown districts. (Type: *T. hookeri* Anderss.)

- 337d 134. *ODYSSEA* Stapf, in Hook. Ic. Pl., t. 3100 (1922)
(*Diplachne paucinervis* of the Fl. Cap.)

Spikelets solitary, shortly peduncled, not falling entire. *Flowers* 5—9. *Glumes* persistent, similar, unequal, ovate, subacute, 1-nerved, membranous, glabrous; lower smaller than the upper. *Valves* 5—9, decreasing in size upwards, ovate, shortly notched, with a short mucro from the back of the tip, 3-nerved, membranous, pilose on the back, subtending a pale and a bisexual flower. *Pale* about as long as its valve, lanceolate, truncate, 2-keeled, concave between the keels, sparsely pilose. *Lodicules* 2, cuneate, 1—3-lobed. *Stamens* 3. *Ovary* obovoid; styles free, plumose above, laterally exserted. *Grain* included in the slightly changed valve and pale, elliptic-oblong in outline; embryo short.

A creeping grass; culms completely hidden by the leaf-sheaths; leaves crowded on the culms; leaf-sheath ribbed, sparsely pilose; blade slightly longer than the sheath, standing at an angle of about 45 degrees to the culm, linear or linear-lanceolate, pungent, closely ribbed, without a distinct midrib, sparsely pilose; inflorescence a contracted panicle; main axis shortly pilose; rhachis more or less flat on the back, keeled on the face, scabrid on the margins; spikelets 2-ranked.

Species 2—3, 1 near the Red Sea; 1 species in South Africa, recorded from the Zoutpansberg district in the Transvaal, South West Africa, Namaqualand, Bechuanaland, and the Van Rhynsdorp and Clanwilliam districts. (Type: *O. paucinervis* (Nees) Stapf)

- 341 135. *ERAGROSTIS* Host., Icon. Gram. Austr., vol. 4, p. 14, pl. 24
(1809)

(*Cladoraphis* Franchet)

Spikelets solitary, peduncled, rarely sessile, not or rarely falling entire. *Flowers* 2 to many. *Glumes* persistent or deciduous, equal or unequal, 1 nerved or the upper sometimes 3-nerved, keeled, usually membranous.

Valves 2 to many, more or less imbricate, ovate to lanceolate or almost orbicular, acute or obtuse, entire, muticous, 3-nerved, with the side nerves short or almost percurrent, membranous to chartaceous, glabrous or very rarely minutely pubescent; all except the uppermost subtending a pale and a bisexual flower. *Pales* subequal to the valves, 2-keeled, membranous, deciduous or persistent on the rachilla. *Lodicules* 2, more or less fleshy. *Stamens* 3, rarely 2. *Ovary* glabrous; styles distinct, plumose above, laterally exserted. *Grain* enclosed by the scarcely altered valve and pale and deciduous with them or more commonly falling with the deciduous valve leaving the more or less persistent pale behind, oblong, ovate, or round in outline; embryo often $\frac{1}{2}$ as long as the grain.

Annuals or perennials, sometimes forming cushion-like growths; culm smooth or striate, glabrous or villous; leaf-sheath striate, shorter than the internode of the culm, glabrous or sometimes pilose from bulbous-based hairs; ligule a row of hairs, very rarely membranous; blade linear, rolled, or setaceous, finely ribbed, often scabrid; inflorescence a lax or contracted panicle, more rarely a raceme or of spikes arranged on the main axis; primary branches solitary or more or less whorled on the main axis, sometimes distant; spikelets sometimes secund and 2-ranked on the rachis.

Species very numerous, found in most warm parts of the world; 98 species in South Africa, widely distributed. (Type: *E. eragrostis* Beauv.)

NOTE.—The genus *Cladoraphis* proposed by M. A. Franchet (*Bull. Mens. Soc. Linn.*, Paris, 1887) and based on *Poa spinosa* Thunb. = *Eragrostis spinosa* Trin. is being sunk by Mr. C. E. Hubbard under *Eragrostis*; it differs from other species of *Eragrostis* in the culm being sometimes divaricately branched, with the branches spinose and acting as phylloclades and bearing the spikelets; the leaves then reduced to scales.—E. P. P.

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136. KOELERIA Pers., Syn. Pl., vol. 1, p. 97 (1805)

Spikelets solitary, peduncled or sessile, not falling entire. *Flowers* 1—4. *Glumes* persistent, unequal or subequal, oblanceolate, linear, or lanceolate-linear, acute, keeled, sometimes ciliate on the keel, herbaceous, glabrous; lower glume smaller than the upper, usually 1-nerved, occasionally 3-nerved; upper glume 3-nerved. *Valves* 1—5, exceeding the glumes, similar to the upper glume, 3—5-nerved, with the middle nerve percurrent or excurrent into a mucro or a short subterminal awn, each subtending a pale and a bisexual flower or the upper, when present, usually without flowers. *Pales* (or pale) subequalling their valves, linear or narrowly lanceolate, subacute, 2-keeled, 2-toothed, hyaline. *Lodicules* 2, hyaline. *Stamens* 3. *Ovary* glabrous; styles distinct, plumose above, laterally exserted. *Grain* oblong in outline, embraced by the hardened back of the valve; embryo small.

Annuals or perennials; culm striate, glabrous or hairy at the nodes; leaf-sheath ribbed, shorter than the internodes of the culm, glabrous or pubescent; ligule scarious; blade almost filiform or flat and with a distinct midrib, glabrous or hairy; inflorescence a spike-like, often interrupted, panicle; main axis hairy.

Species numerous, mainly natives of Europe, North Africa, and temperate Asia; 2 species in South Africa, found in the Transvaal, Zululand, Natal, Basutoland, the Orange Free State, and through the eastern districts to the south-western districts of the Cape Province; also recorded from the Albany, Beaufort West, Clanwilliam, and Queenstown districts. (Type: *K. cristata* (L.) Pers.)

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137. MELICA Linn., Sp. Pl., ed. 1, p. 66 (1753)

Spikelets solitary, peduncled, falling entire or not falling entire; peduncles capillary, with usually strongly recurved tips, often pubescent. *Flowers* 1—2, rarely 3. *Glumes* persistent or deciduous, equal or subequal, similar, lanceolate or ovate-lanceolate, subacuminate, acute or subacute, 3—5-nerved, membranous, glabrous; upper glume sometimes 7-nerved. *Valves* 3—5, as long as the glumes and more or less clasped by them, lanceolate, membranous, often long-villous; lowermost valve or the 2 lowest valves

each subtending a pale and a bisexual flower; upper valve empty and reduced and embracing one another so as to form a club-shaped body. *Pales* shorter than their valves, lanceolate or oblanceolate, acute, 2-keeled, ciliate on the keels.

Perennials; culm smooth, glabrous; leaf-sheath strongly ribbed, scabrid, more rarely almost smooth; ligule hyaline; blade setaceous or linear, scabrid, more rarely almost smooth; inflorescence a narrow panicle or raceme.

Species about 40, natives of most temperate countries; 6 species in South Africa, distributed from the Transvaal, Zululand, Natal, Basutoland, the Orange Free State, through the eastern districts to the south-western districts of the Cape Province; also recorded from the Aliwal North, Barkly East, Cradock, Graaff Reinet, Queenstown, and Somerset East districts. (Type: *M. nutans* L.)

357 138. CENTOTHECA Desv., *Nouv. Bull. Soc. Philom.*, vol. 2, p. 189 (1810)

Spikelets solitary, long peduncled, not falling entire. *Flowers* 7—9. *Glumes* subequal, similar, keeled, 3-nerved, with a short mucro from the back of the tip, somewhat scabrid on the keel, membranous, glabrous; lower glume smaller than the upper and situated appreciably below it. *Valves* 7—9, similar, broadly elliptic, rounded on the back, deeply concave, with a very short mucro from the back of the tip, 7-nerved, membranous, glabrous. *Pale* situated on the rhachilla appreciably higher up than its valve and falling with the valve above it, lanceolate, notched, 2-keeled, flat on the back, ciliate on the keel. *Lodicules* 2. *Flowers* or *grain* not seen.

Annuals(?); leaf-sheath shorter than the internode of the culm, ribbed, glabrous; ligule scarious; blade lanceolate, acuminate, somewhat cordate at the base, finely ribbed, with an evident midrib, glabrous or scantily pubescent; inflorescence a large open panicle.

Species 3, natives of Asia, Africa, and the Pacific Islands; 1 species in South Africa, found in Zululand and Natal. (Type: *C. lappacea* Desv.)

367 139. BRIZA Linn., *Sp. Pl.*, ed. 1, p. 70 (1753)

Spikelet solitary, peduncled, not falling entire; peduncles capillary. *Flowers* 4—17. *Glumes* persistent, sometimes almost at right angles to the rhachilla, subequal, broadly ovate, very concave, 3- to sub-7-nerved, membranous, glabrous. *Valves* 4—20, exserted from the glumes, broadly ovate, very concave, subacute, clasping the rhachilla at the base, 7—9-nerved, rarely 5-nerved, more or less papery, finely pilose, each subtending a pale and a bisexual flower or the upper few empty. *Pales* suborbicular, 2-keeled, finely ciliate on the keels and with the keels often winged, subhyaline. *Lodicules* 2, obliquely ovate. *Stamens* 3. *Ovary* glabrous; styles short, distinct, loosely plumose above, laterally exserted. *Grain* tightly embraced by the hardened back of the valve and the pale, usually adhering to the pale; embryo small.

Annuals; culm striate, glabrous; leaf-sheath ribbed, shorter than the internode of the culm, glabrous; ligule hyaline; blade flat, without a very distinct midrib; inflorescence a raceme or panicle.

Species about 12, natives of the Mediterranean region and South America; 3 species (introduced) almost confined to the south-western districts of the Cape Province. (Type: *B. media* L.)

368 140. PLAGIOCHLOA Adam. & Sprague, *Journ. S. Afr. Bot.*, vol. 7, p. 89 (1941)

(*Brizopyrum* Nees of the Fl. Cap. in part)

Spikelets solitary, subsessile, not falling entire. *Flowers* 3—10. *Glumes* persistent, shorter than the valves, with the back of the lower glume turned

towards the main axis, subequal, ovate-lanceolate, boat-shaped, acuminate, acute, membranous, with hyaline margins, 4—5-nerved, glabrous or hairy from bulbous-based hairs. *Valves* 4—10, similar, decreasing in size upwards, ovate, boat-shaped, obtuse, stiffly membranous, glabrous or glandular on the lower half, each subtending a pale and a bisexual flower or the second uppermost sometimes with a male flower or the uppermost reduced and empty. *Pales* subequalling their valves, lanceolate, acute, 2-keeled; keels sometimes narrowly winged. *Lodicules* 2, truncate, acuminate, ciliate, sometimes papillose. *Stamens* 3. *Ovary* obovoid, glabrous; styles distinct, plumose above, laterally exserted. *Grain* enclosed by the scarcely changed valve and pale, oblong in outline; embryo small.

Generally tufted perennials or less often annuals; culm smooth, glabrous; leaf-sheath shorter than the internode of the culm, ribbed glabrous or densely villous with bulbous-based hairs; ligule ciliate; blade convolute or flat and linear, ribbed, glabrous or scantily pilose with bulbous-based hairs; inflorescence a simple spike or spike-like raceme.

Endemic; species 7, extending from the south-western districts of the Cape Province to Namaqualand. (Type: *P. uniolae* (L. fil.) Adamson and Sprague)

371 141. LASIOCHLOA Kunth, Rev. Gramin., vol. 2, p. 555, t. 192 (1829)

Spikelets solitary, shortly peduncled, not falling entire. *Flowers* 2—4. *Glumes* persistent, equal or subequal, similar or subsimilar, boat-shaped, mostly acuminate, acute, 5-nerved, membranous, hispid with glandular often bulbous-based hairs; lower glume sometimes smaller than the upper. *Valves* 2—4, shorter than the glumes or slightly exceeding them, similar, ovate or lanceolate, subacute, 7—9-nerved, membranous or somewhat chartaceous, glabrous or pubescent and ciliate on the lower half, each subtending a pale and a bisexual flower or the uppermost valve subtending a male flower. *Pales* subequalling their valves, lanceolate or linear, of the same texture as the valves, 2-keeled, ciliate on the keels. *Lodicules* 2, truncate, cuneate, scantily ciliate from articulated hairs. *Stamens* 3. *Ovary* glabrous, styles distinct, plumose above, laterally exserted. *Grain* enclosed by the unchanged valve and pale, oblong in outline; embryo small.

Annuals or perennials; culm smooth, glabrous; leaf-sheath shorter than the internode of the culm, ribbed or scantily pilose with bulbous-based hairs; ligule long-ciliate; blade flat or convolute, linear, ribbed, without a very distinct midrib, glabrous or pilose with bulbous-based hairs.

Endemic; species 4, mostly confined to the south-western districts of the Cape Province; also recorded from the Van Rhynsdorp district and Namaqualand and from the high mountains up to Basutoland. (Type: *L. ciliaris* (Nees) Kunth)

371a 142. STIBURUS Stapf, Fl. Cap., vol. 7, p. 696 (1900)
(*Triphlebia* Stapf)

Spikelets solitary, peduncled, not falling entire. *Flowers* 1—4. *Glumes* persistent, similar, equal or unequal, ovate or lanceolate, often long-acuminate, acute, membranous, 1-nerved, pilose sometimes with bulbous-based hairs, more rarely almost glabrous. *Valves* 2—5, shortly exserted from the glumes, similar, elliptic, lanceolate or ovate-lanceolate, often long-acuminate, obtuse or acute, 3-nerved, membranous, densely pilose sometimes with bulbous-based hairs, each subtending a pale and a bisexual flower or the uppermost with a pale only. *Pales* shorter than their valves, lanceolate, sometimes subacuminate, truncate, 2-keeled, membranous. *Lodicules* 2, minute. *Ovary* glabrous; styles distinct, plumose above, laterally exserted.

Grain enclosed by the hardly changed valve and pale, oblong in outline; pericarp delicately hyaline, free, swelling slightly in water; embryo short.

Tufted perennials; culm smooth or striate, glabrous; leaf-sheath shorter than the internode of the culm, ribbed, softly pilose, rarely glabrous; ligule ciliate; blade convolute, more rarely flat, finely ribbed, scantily pilose, more rarely glabrous.

An African genus of 2 species, both of which occur in South Africa and recorded from the Transvaal, Natal, Basutoland, the Orange Free State, East Griqualand, and Pondoland. (Type: *S. alopecuroides* (Hack.) Stapf)

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143. DACTYLIS Linn., Sp. Pl., ed. 1, p. 71 (1753)

Spikelets in dense second shortly peduncled fascicles, not falling entire. *Flowers* 3—7. *Glumes* persistent, subequal or the lower shorter, keeled, mucronate, 1—3-nerved, rigid, membranous. *Valves* 3—7, exceeding the glumes, 5-nerved, keeled, with the keel ciliolate and produced into a mucro or short awn, subtending a pale and a bisexual flower; uppermost valve sometimes barren. *Pales* slightly shorter than the valves, 2-keeled. *Stamens* 3. *Ovary* glabrous; styles distinct, plumose above. *Grain* enclosed by the valve and pale.

A tall perennial; leaf-blade flat; ligule scarious; inflorescence a crowded panicle or false spike.

Species 1, native of the temperate regions of the Old World; cultivated in parts of South Africa. (Type: *D. glomerata* L.)

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144. CYNOSURUS Linn., Sp. Pl., ed. 1, p. 72 (1753)

Spikelets sterile and fertile, in fascicles consisting of one fertile spikelet surrounded by the sterile spikelets. *Fertile spikelet* sessile or subsessile. *Flowers* 1—6. *Glumes* subequalling the valves, lanceolate, long-acuminate, acute, 1-nerved, almost hyaline, scabrid on the keel. *Valves* 2—7, similar, decreasing in size upwards, oblong or lanceolate, mucronate or awned from close below the tip, 5-nerved, membranous, each subtending a pale and a bisexual flower or sometimes the upper or uppermost valve without a flower; awn about twice as long as the body of the valve, scabrid. *Pales* subequalling the valves, and similar in texture, lanceolate, acuminate, acute, 2-toothed, 2-keeled. *Lodicules* 2. *Stamens* 3. *Ovary* glabrous; styles distinct, loosely plumose above, laterally exerted. *Grain* oblong in outline, more or less adhering to the valve and pale; embryo small. *Sterile spikelets* consisting of a number of linear-lanceolate long-acuminate empty valves on an elongated rachis; internodes of rachis very evident.

Annuals; culm ribbed, glabrous; leaf-sheath ribbed, shorter than the internode of the culm, glabrous; ligule hyaline; blade flat, conspicuously ribbed, scabrid, glabrous; inflorescence a more or less ovate spike-like raceme; primary branches sometimes all turned to one side giving the inflorescence a unilateral appearance.

Species 3—4, natives of Europe, western Asia and northern Africa; 1 species in South Africa, recorded from the Cape and the George and Knysna districts. (Type: *C. cristatus* L.)

374

145. LAMARCKIA Moench., Meth. Pl., p. 201 (1794)

Spikelets in groups of 4, with 1 spikelet fertile and surrounded by 3 sterile spikelets. *Fertile spikelet* peduncled, falling entire. *Flowers* 1—2. *Glumes* subequal, long-acuminate, acute, keeled, almost hyaline. *Valves* 2, sometimes 1, lanceolate or ovate-oblong, 2-fid, awned from the middle or below the tip, membranous, each subtending a pale and a bisexual flower or the upper valve empty or subtending a male flower; awn 3 times as long as the body of the valve. *Pale* subequalling the valve and of the same texture, lanceolate,

subacuminate, 2-toothed, 2-keeled. *Lodicules* 2, minute. *Stamens* 3. *Styles* distinct, barbellate. *Grain* elliptic-oblong in outline, enclosed in the unaltered valve and pale. *Sterile spikelets* peduncled. *Glumes* lanceolate, acute, membranous. *Valves* 12—13, obovate, keeled, membranous, empty. *Internodes* of rachilla evident between the valves.

A low-growing tufted annual; culm striate; leaf-sheath longer than the internode of the culm, ribbed, glabrous; ligule hyaline; blade flat, finely ribbed, with a distinct midrib; inflorescence a raceme (usually unilateral) composed of the groups of spikelets.

Species 1, native of the Mediterranean region, recorded in South Africa from the Cape. (Type: *L. aurea* (L.) Moench.)

376 146. SCHISMUS Beauv., Essai. Agrost., p. 73, pl. 15, f. 4 (1812)

Spikelets solitary, peduncled or sessile, not falling entire. *Flowers* 3—9. *Glumes* equal or subequal, subsimilar, lanceolate, sometimes subacuminate, acute, membranous, usually with hyaline margins, glabrous or pubescent; lower glume 5—7-nerved; upper glume 3—5-nerved. *Valves* 4—10, all enclosed within the glumes or the upper exserted, decreasing in size upwards, elliptic or obovate, notched at the apex, 7—9-nerved, membranous, usually with hyaline tips, glabrous or villous, subtending a pale and a bisexual flower; the uppermost empty. *Pales* subequalling the valves, obovate, 2-keeled, hyaline, glabrous or sometimes pilose. *Lodicules* 2, ciliate. *Stamens* 3. *Ovary* subglobose, glabrous; styles distinct, densely plumose above, laterally exserted. *Grain* loosely embraced by the unaltered valve and pale, oblong to obovate in outline; embryo less than $\frac{1}{2}$ the length of the grain.

Usually small annuals; culm smooth; leaf-sheath shorter than the internode of the culm, ribbed, glabrous; ligule ciliate; blade linear, sometimes convolute, glabrous; inflorescence an open or contracted panicle.

Species about 4, native of the Mediterranean region, India, and Africa; 3 species in South Africa, distributed from the Aliwal North district to the Swellendam district and from Namaqualand to the Worcester and Piquetburg districts; also recorded from some central and north-western districts. (Type: *S. marginatus* Beauv. = *S. barbatus* (L.) Thell.)

378 147. POA Linn., Sp. Pl., ed. 1, p. 67 (1753)

Spikelets solitary, peduncled, not falling entire; peduncle swollen at the apex. *Flowers* 2—6. *Glumes* unequal or subequal, similar, ovate or oblong, 1—3-nerved, keeled, membranous, glabrous. *Valves* 2—6, exserted from the glumes, similar, decreasing in size upwards, of the same texture as the glumes, lanceolate or oblong, obtuse or subacute, often scabrid on the keel, scantily pilose, more rarely glabrous, sometimes with long wool from the base, all subtending a pale and a bisexual flower or only the lower valves or lowermost valve with a bisexual flower; the uppermost valve or two upper valves subtending a female flower. *Pales* smaller than or subequalling the valves, 2-keeled, thinner in texture than the valves, glabrescent or pilose. *Lodicules* 2, more or less 2-lobed. *Stamens* 3. *Ovary* glabrous; styles distinct, plumose above, laterally exserted. *Grain* ovate, oblong, or linear in outline, free or adhering to the pale; embryo small.

Annuals or perennials; culm striate, glabrous; leaf-sheath longer than the internode of the culm, ribbed; ligule membranous or hyaline; blade long-linear, prominently or finely ribbed, smooth or sometimes scabrous on the margins, glabrous; inflorescence a lax or contracted panicle; primary branches solitary or usually 2-nate or clustered on the central axis, pubescent.

Species many, natives of the temperate regions of both hemispheres; 10 species recorded from South Africa, distributed from the Transvaal, Natal, Basutoland, the

Orange Free State, and through the eastern belt to the Van Rhynsdorp district; also recorded from the Albany, Kimberley, and Somerset East districts. (Type: *P. pratensis* L.)

NOTE.—Plants sometimes viviparous, producing bulbils on the inflorescence.—E. P. P.

384 **148. PUCCINELLIA** Parl., Fl. Ital., p. 366 (1848)

(*Atropis* Griseb. of the Fl. Cap.)

Spikelets solitary, peduncled or sessile, not falling entire. *Flowers* 2—7. *Glumes* persistent, unequal or subequal, sometimes similar, oblong, obtuse, rounded on the back, 1—3-nerved, membranous, glabrous. *Valves* 2—7, exerted from and of the same texture as the glumes, equal, similar, lanceolate, oblong, or ovate-oblong, subacute or obtuse, glabrous or pilose on the lower half, each subtending a pale and a bisexual flower. *Pales* subequalling the valves and of the same texture or thinner, lanceolate, 2-keeled. *Lodicules* 2, ovate, hyaline. *Stamens* 3. *Ovary* glabrous; styles distinct, delicately plumose, laterally exerted. *Grain* tightly embraced by the hardened valve and pale, oblong in outline; embryo small.

Perennials; culm striate, glabrous; leaf-sheath longer than the internode of the culm, ribbed, glabrous; ligule membranous; blade narrow, folded, distinctly or indistinctly ribbed, sometimes scabrid on the margin, glabrous; inflorescence an open or contracted, sometimes almost spike-like, panicle.

Species about 12, natives of the temperate regions of the northern hemisphere; 3 species in South Africa and recorded from the Aliwal North, Calvinia, Ceres, Richmond, Sutherland, and Uitenhage districts; also from South West Africa and Namaqualand. (Type: *P. distans* (L.) Parl.)

385 **149. FESTUCA** Linn., Sp. Pl., ed. 1, p. 73 (1753)

Spikelets solitary, peduncled, not falling entire. *Flowers* 2—9. *Glumes* persistent, unequal or subequal, lanceolate or ovate-lanceolate, acute or obtuse, 1-nerved or the upper 3—5-nerved, often scabrid on the keel, membranous, glabrous or pubescent. *Valves* 2—10, exerted from the glumes, of the same texture as the glumes, similar, decreasing in size upwards, lanceolate, sometimes awned, 5—7-nerved, often scabrid on the keel, usually glabrous, subtending a pale and a bisexual flower or the uppermost usually subtending a rudimentary pale and sometimes a rudimentary flower; awn, when present, from $\frac{1}{4}$ — $\frac{1}{2}$ as long as the body of the valve. *Pales* subequalling the valves, lanceolate, 2-keeled, almost hyaline. *Lodicules* 2, unequally 2-lobed, hyaline. *Stamens* 3. *Ovary* glabrous or the top minutely hairy; styles distinct, very short, terminal or subterminal, plumose, laterally exerted. *Grain* oblong in outline, dorsally convex, grooved or concave in front, free or more or less adhering to the pale or to the valve and pale, tightly enclosed by the slightly hardened valve and pale.

Annuals or perennials; culm smooth or striate, glabrous; leaf-sheath shorter than the internode of the culm, glabrous; ligule scarious; blade linear, usually prominently ribbed, glabrous, sometimes scabrid.

Species many, mostly natives of the temperate regions of both hemispheres; 8 species recorded from South Africa with a wide distribution. (Type: *F. ovina* L.)

385a **150. VULPIA** Gmelin, Fl. Badens, vol. 1, p. 8 (1805)

Spikelets solitary, peduncled, not falling entire; peduncle 3-angled, scabrid on the margins. *Flowers* 4—7. *Glumes* persistent, similar, unequal; lower glume shorter than the upper, very minute or obsolete or subulate-lanceolate, 1-nerved; upper glume subulate to subulate-lanceolate, 3-nerved. *Valves* 5—8, much exerted from the glumes, lanceolate, passing into an

awn, rounded on the back, faintly 5-nerved, glabrous or shortly pilose, subtending a pale and a bisexual flower; the upper valve without flowers; awn slightly longer to twice as long as the body of the valve, scabrid. *Pales* lanceolate to linear-lanceolate, entire or minutely 2-toothed, 2-keeled, hyaline, scabrid on the keels. *Lodicules* 2, unequally lobed, hyaline. *Stamens* 1—3. *Ovary* glabrous or minutely hispid on the top; stigmas sessile, plumose, permanently enclosed between the valve and the pale, or shortly exerted at the base. *Grain* linear in outline, more or less adhering to the pale; embryo small.

Annuals; culm smooth, glabrous; leaf-sheath ribbed, glabrous; ligule membranous; blade linear, very narrow, usually convolute or involute, at least when dry; inflorescence a spike-like panicle.

Species about 20, mostly natives of the Mediterranean region and adjacent countries; 2 species in South Africa as introductions, mainly in the south-western districts; also recorded from the Albany, Clanwilliam, Riversdale, Somerset East, Uitenhage and Van Rhynsdorp districts, and Namaqualand. (Type: *V. myurus* L.)

388 151. SCLEROPOA Griesb., Spicil. Fl. Rumel., vol. 2, p. 431 (1844)

Spikelets solitary, peduncled, not falling entire. *Flowers* 4—12. *Glumes* persistent, equal, similar, ovate, acute or obtuse, 1—3-nerved, keeled, membranous, ciliate on the keel. *Valves* 6—14, exerted from glumes, equal, similar, oblong-lanceolate, subobtuse, 5-nerved, firmly herbaceous, glabrous, subtending a pale and a bisexual flower; a few upper valves smaller and empty. *Pales* subequalling the valves and thinner in texture, lanceolate, 2-keeled, ciliate on the keels. *Lodicules* 2, ovate, hyaline. *Stamens* 3. *Ovary* glabrous; styles distinct, plumose above, laterally exerted. *Grain* very tightly embraced by the hardened valve and pale, oblong in outline; embryo small.

Dwarf annuals; culm striate, glabrous; leaf-sheath shorter than the internode of the culm, ribbed, glabrous; ligule hyaline; blade flat, linear, distinctly veined, without a distinct midrib, scabrid, glabrous.

Species 3, natives of the Mediterranean region, western and south-central Europe, Persia, and the Canary Islands; 1 species in South Africa recorded from the Cape and the Port Elizabeth district. (Type: *S. rigida* Griesb.)

389 152. BROMUS Linn., Sp. Pl., ed. 1, p. 76 (1753)

Spikelets solitary, peduncled, not falling entire. *Flowers* 2—11. *Glumes* persistent, equal or unequal, similar, lanceolate, more rarely ovate or linear-lanceolate, acute or subacute, sometimes acuminate, keeled, scabrid on the keels, stiffly membranous, sometimes villous; lower 1—7-nerved; upper 3—9-nerved. *Valves* 2—12, usually exerted from the glumes and of the same texture, similar, decreasing in size upwards, lanceolate, 2-toothed or 2-lobed, awned or mucronate from the sinus, 5—13-nerved, keeled, scabrid on the keel and main nerves, glabrescent or sometimes villous, subtending a pale and a bisexual flower, or the uppermost valve or few upper valves empty, more rarely with rudimentary flowers. *Pales* subequalling their valves, thinner in texture, linear or lanceolate, entire or bifid, 2-keeled, ciliate on the keels, sometimes pilose. *Lodicules* 2, oblong or lanceolate, entire or lobed. *Stamens* 3. *Ovary* obovoid, often with a large villous 3- or 2-lobed terminal appendage; styles lateral on the appendage, plumose above, laterally exerted or in the cleistogamic species permanently enclosed. *Grain* linear to linear-oblong in outline, usually adhering to the valve and pale or at least to the latter; embryo small.

Annuals or perennials; culm smooth, striate, or ribbed, glabrous; leaf-sheath as long as or shorter than the internode of the culm, ribbed, somewhat scabrid, pubescent or villous, with distinct veins and a prominent midrib, scabrid, pilose, villous, or glabrous; inflorescence a lax or contracted panicle, more rarely a raceme or subraceme; primary branches 2—3-nate or clustered on the main axis, glabrous or pilose, sometimes scabrid; main axis scabrid.

Species numerous, mostly natives of the temperate regions, many in South America; 8 species in South Africa, widely distributed. (Type: *B. sterilis* L.)

393 153. *BRACHYPODIUM* Beauv., Essai., Agrost., p. 100, pl. 19, f. 3 (1812)

Spikelets solitary, sessile or subsessile, not falling entire. *Flowers* 8—17. *Glumes* persistent, equal or subequal, lanceolate, or oblong-lanceolate, acute, 3—7-nerved, stiffly membranous, glabrous. *Valves* 5—17, exerted from the glumes, similar, more or less equal or decreasing in size upwards, lanceolate, 7-nerved, awned, ciliate, scabrid, membranous, subtending a pale and a bisexual flower; the few upper glumes sometimes reduced to little more than awns. *Pales* thinner in texture than their valves, sometimes equalling them, oblong or oblong-linear, almost truncate at the apex, 2-keeled and ciliate on the keels. *Lodicules* 2, lanceolate, usually ciliate. *Stamens* 3, rarely 2. *Ovary* with a villous appendage at the top; styles laterally exerted. *Grain* linear or linear-oblong in outline, more or less adhering to the pale; embryo small.

Annuals or perennials; culm ribbed, glabrous; leaf-sheath ribbed, glabrous or pilose; ligule membranous; blade flat, linear, with evident veins and a more or less distinct midrib, ciliate, glabrous or pilose.

Species about 15, natives mainly of the temperate regions of the northern hemisphere; 3 species in South Africa, spread from the Transvaal, Natal, and through the eastern districts to the Cape and from high mountains in the Aberdeens, Somerset East, and Graaff Reinet districts. (Type: *B. pinnatum* Beauv.)

395. 154. *LOLIUM* Linn., Sp. Pl., ed. 1, p. 83 (1753)

Spikelets solitary, sessile, not falling entire. *Flowers* 4—11. *Glumes* of terminal spikelets equal and similar; lower glume absent in the lateral spikelets, very rarely present in some inflorescences and then very much smaller than the upper glume; upper glume persistent, facing the rachis, lanceolate or linear-lanceolate, obtuse or subacute, 7—9-nerved, glabrous. *Valves* 6—12, usually not exerted from the glumes, sometimes decreasing in size upwards, lanceolate or elliptic, rounded on the back, awnless or awned or mucronate, 5-nerved, coriaceous, glabrous, subtending a pale and a bisexual flower, sometimes the uppermost or the 2 upper valves much reduced and empty; awn less than half as long as the body of the valve. *Pales* equalling or subequalling the valves, somewhat thinner in texture, lanceolate, lanceolate-elliptic, or lanceolate-oblong, 2-keeled, ciliate on the keels or the keels more or less crested. *Lodicules* 2, lanceolate, with a lateral tooth. *Stamens* 3. *Ovary* truncate, glabrous; styles distinct, plumose above, laterally exerted. *Grain* elliptic-oblong to linear-oblong in outline, tightly enclosed by the valve and pale and adhering to both; embryo short.

Annuals or perennials; culm striate or ribbed, glabrous; leaf-sheath longer than the internode of the culm, ribbed, glabrous; ligule membranous; blade flat, linear, closely ribbed, often scabrid; inflorescence a simple spike; the central axis with concavities for the reception of the spikelets, scabrid.

Species about 12, natives of the temperate regions of the Old World; 3 species in South Africa, all introduced, widely distributed. (Type: *L. perenne* L.)

- 398 155. **LEPTURELLA** Stapf, in Mem. Soc. Bot. France, vol. 8, p. 222 (1912)
(*Oropetium* Trin. of the Fl. Cap.)

Spikelets solitary, sessile, not falling entire. *Flower* 1. *Glumes* of terminal spikelet both developed, equal, similar; lower glume of lateral spikelets absent; upper glume longer than the valve, facing the rhachis, linear or lanceolate, obtuse or subacute, stiffly membranous, 1—3-nerved, glabrous. *Valve* 1, lanceolate, obtuse, almost hyaline, glabrous, subtending a pale and a bisexual flower. *Pale* subequalling the valve and of the same texture, lanceolate, faintly 2-nerved. *Lodicules* 2, minute. *Stamens* 3. *Ovary* glabrous; styles distinct, plumose above, laterally exserted. *Grain* oblong in outline; embryo about $\frac{1}{3}$ the length of the grain.

Dwarf tufted perennials; culm striate or smooth; leaf-sheath ribbed, glabrous; ligule hyaline; blade linear, longitudinally folded, ribbed, glabrous or sparsely pilose; inflorescence a spike; main axis with concavities for the reception of the spikelets; spikelets arranged distichously.

Species 3, natives of Africa and India; 1 species in South Africa, recorded from South West Africa, several of the north-western districts, the Transvaal, the Orange Free State, and the Somerset East district. (Type: *L. aristata* Stapf)

- 402 156. **LEPTURUS** R. Br., Prodr., Fl. Nov. Holl., p. 207 (1810)

Spikelets solitary, sessile, not falling entire. *Flower* 1. *Glumes* persistent, of terminal spikelets both developed, similar, equal; lower glume of lateral spikelets absent; upper glume longer than the valve, facing the main axis, lanceolate, acute, 5-nerved, coriaceous, glabrous. *Valve* 1, lanceolate, acute, 3-nerved, membranous, subtending a pale and a bisexual flower. *Pale* equalling the valve, lanceolate, 2-nerved, hyaline. *Lodicules* 2. *Stamens* 3. *Ovary* truncate, glabrous; styles distinct, plumose above, laterally exserted. *Grain* narrow-oblong in outline, enclosed with the valve and the pale between the glume and the axis of the inflorescence.

Annuals or perennials; culm smooth, glabrous; leaf-sheath longer or shorter than the internode of the culm, glabrous; ligule membranous; blade narrow, linear, ribbed, without a distinct midrib, glabrous; inflorescence a simple cylindric spike; main axis with concavities for the reception of the spikelets, very closely adpressed to the axis.

Species about 6, natives of the coastal regions of the Old World; 1 species in South Africa, recorded from the Cape, the Riversdale, Uniondale, Uitenhage, and Komgha districts. (Type: *L. repens* R. Br.)

- 405 157. **AGROPYRON** Gaertn., Nov. Comm. Acad. Sci. Petrop., vol. 14, p. 539, pl. 19, f. 4 (1770)
(*Agropyrum* Gaertn., of the Fl. Cap.)

Spikelets solitary, sessile, not falling entire. *Flowers* 4—10. *Glumes* with their edges turned to the axis of the inflorescence, similar, equal, lanceolate, keeled, 5- to many-nerved, coriaceous, glabrous; keel not median. *Valves* 5—11, exserted from the glumes, lanceolate, obtuse, sometimes 3-toothed or mucronate, sometimes acuminate or produced into an awn, 5- (rarely 7—9-) veined, coriaceous, glabrous, subtending a pale and a bisexual flower; uppermost valve with a rudimentary pale. *Pales* subequalling the valves, elliptic, obovate, or lanceolate, shortly acuminate, truncate, 2-keeled, with the keels acute or somewhat winged or shortly ciliate. *Lodicules* 2, oblique or unequally lobed, densely ciliate. *Stamens* 3. *Ovary* obovoid, with a large villous top; styles almost absent; stigmas delicately plumose. *Grain* linear-oblong in outline, tightly enclosed by the valve and pale and adhering to them or at least to the pale.

Perennials; culm smooth, glabrous; leaf-sheath longer than the internodes of the culm, glabrous; ligule scarious; blade rigid, convolute, ribbed, smooth, glabrous; inflorescence a spike; internodes of axis concavo-convex; spikelets distichous.

Species 30—35, natives of the temperate regions of Europe and Asia; 1 species in South Africa, distributed from South West Africa, through the coastal area to the Komgha district. (Type: *A. triticum* Gaertn.)

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158. SECALE Linn., Sp. Pl., ed. 1, p. 84 (1753)

Spikelets solitary, sessile, falling entire with an internode of the axis. *Flowers* 2. *Glumes* equal or slightly unequal, linear-subulate, keeled, stiff, with membranous margins, rigidly ciliate on the keels. *Valves* 2, more or less exserted from the glumes, oblong or lanceolate, passing into a straight awn, 5-nerved, keeled, firmly membranous, subtending a pale and a bisexual flower; awn slightly shorter than the valve, scabrid. *Pales* as long as or almost as long as the valves, lanceolate, 2-toothed, 2-keeled, membranous, rigidly ciliate on the keels. *Lodicules* 2, hyaline, ciliate. *Stamens* 3. *Ovary* obovoid, densely tomentose above; styles distinct, plumose above, laterally exserted. *Grain* oblong in outline, enclosed by the valve and pale, free or almost so; embryo $\frac{1}{3}$ the length of the grain.

Annuals or perennials; culm ribbed, glabrous; leaf-sheath ribbed, glabrous; ligule short, scarious; blade linear, ribbed, minutely pubescent; inflorescence a dense cylindric spike; internodes of axis flattened, densely pilose on the margins.

Species 4, natives of the Mediterranean region, eastern Europe, and Turkestan; 1 species in South Africa, recorded from the Roggeveld Mountains in the Sutherland district. (Type: *S. cereale* L.)

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159. HORDEUM Linn., Sp. Pl., ed. 1, p. 84 (1753)

Spikelets in groups of 3's at the end of a short peduncle, 1 sessile, 2 peduncled, usually all awned, rarely 1 of the peduncled spikelets absent or represented by the 2 glumes only. *Sessile spikelet* 1-flowered; rhachilla produced as a bristle. *Glumes* linear-lanceolate, long-ciliate, or reduced to 2 scabrid awns. *Valve* 1, lanceolate, acuminate, awned, membranous, glabrous, subtending a pale and a bisexual flower; awn 2—4 times as long as the body of the valve, scabrid. *Pale* about as long as the valve, lanceolate, acuminate, acute or truncate, sometimes 2-toothed, membranous. *Lodicules* 2, lanceolate, ciliate or ciliolate, hyaline. *Stamens* 3. *Ovary* villous above; styles distinct, plumose above, laterally exserted. *Grain* tightly enclosed and usually adhering to the valve and pale, oblong or narrowly oblong in outline; embryo short. *Peduncled spikelets* both similar (very rarely one absent or represented by 2 glumes), 1-flowered or both reduced to 2 glumes and a barren valve. *Glumes* linear-lanceolate, awned, ciliate or represented by 2 scabrid awns. *Valve* lanceolate, acuminate, keeled, usually awned, scabrid on the keel, membranous, sometimes pilose within, empty or subtending a pale and a male or bisexual flower; awn, when present as long or twice as long as the body of the valve. *Pale* (when present) subequalling its valve, lanceolate, keeled, scabrid on the keels; membranous, sometimes pilose. *Ovary* (when present) often rudimentary.

Annuals or perennials; culm ribbed, glabrous; leaf-sheath longer or shorter than the internode of the culm, ribbed, glabrous; ligule membranous; blade flat, linear, closely ribbed, smooth or scabrid, sometimes pubescent; inflorescence a dense spike-like raceme.

Species about 20, natives of the temperate regions of both hemispheres; 2 species in South Africa, probably introduced, recorded from the Witteberg Range, through the coastal belt to the Calvinia and Van Rhynsdorp districts; also recorded from the Transvaal. (Type: *H. vulgare* L.)

2. Hypogynous bristles present, numerous, linear
 Hypogynous bristles absent 26. *Eriospora* A. Rich. 3
3. Spikelet of one terminal female flower surrounded by linear bracts, a number of which have one stamen 25. *Chrysithrix* Linn.
 Spikelets bearing flowers of one sex only, if bearing male and female flowers, then female flower basal and with 1 or many upper male flowers 4
4. Nut bony, ovoid, on a gynophore ... 27. *Scleria* Berg.
 Nut sessile 5
5. Nut enclosed in a bottle-like bract which is either completely closed or split down one side 6
 Nut not enclosed in a bottle-like bract 23. *Tetraria* Beauv.
6. Lateral spikelets consisting of one female flower and 1—6 male flowers inserted above the female upon the distinctly developed axis of the spikelet; rarely the male flowers reduced to empty glumes or wanting; utricle usually 2-cleft 28. *Schoenoxiphium* Nees
 Lateral spikelets consisting only of 1 female flower and the usually rudimentary axis; utricle closed, entire, or toothed 29. *Carex* Linn.
7. Glume with 1 or 2 scales that envelope the flower 8
 Glumes without scales; hypogynous bristles present or absent 9
8. Scales 2 1. *Lipocarpa* R. Br.
 Scale 1 2. *Ascolepis* Steud.
9. Ovary on a minute gynophore, surrounded by a small disc 10. *Ficinia* Schrad.
 Ovary sessile, if on a small gynophore (cf. *Scirpus* spp.) then not surrounded by a disc 10
10. Glumes long-awned, pubescent ... 12. *Fuirena* Rottb.
 Glumes sometimes mucronate, if awned then not pubescent or spikelet distichous 11
11. Glumes distichous; hypogynous bristles 0 12
 Glumes spirally imbricate or, if subdistichous, then hypogynous bristles usually present 17
12. Style-branches 2 13
 Style-branches 3 15
13. Inflorescence ovoid or cylindric, with the spikelets closely packed; spikelets of 4—7 glumes, with the lowest or 2 lowest bearing bisexual flowers 9. *Kyllinga* Rottb.
 Inflorescence of several distinct lax spikelets; spikelets of many glumes, with the lowest 5 or more bearing bisexual flowers 14
14. Nut laterally compressed 5. *Pycneus* Beauv.
 Nut dorsally compressed 6. *Juncellus* C. B. Cl.
15. Keel of fertile glumes narrowly winged 8. *Courtoisia* Nees
 Keel of fertile glumes without wings 16
16. Rachilla usually wingless, persistent 4. *Cyperus* Linn.
 Rachilla winged, disarticulating above the two lowest empty glumes 7. *Mariscus* Gaertn.

17. Hypogynous bristles absent 18
 Hypogynous bristles present... .. 23
18. Male flowers or sterile flowers below the bisexual flower 19
 Male flowers above the bisexual flower 20
19. Axis of spikelet above the insertion of the nut elongated, thickened and curved round the nut **19. Epischoenus C. B. Cl.**
 Axis of spikelet not elongated or curved round the nut **23. Tetraria Beauv.**
20. Style caducous; base enlarged and distinguished from the nut by a constriction or line **15. Fimbristylis Vahl**
 Style deciduous or, if persistent, not distinguishable from top of nut ... 21
21. Base of style persistent on the nut as a small button **16. Bulbostylis Kunth**
 Base of style not remaining as a button on the nut 22
22. Stems without nodes between the basal leaves and the inflorescence; inflorescence a head, corymb, or the spikelet solitary **13. Scirpus Linn.**
 Stems with leaves all the way up; inflorescence usually a long panicle **21. Cladium P. Br.**
23. Hypogynous bristles 3, feathered at the base and 3-fid above **17. Trianoptiles Fenzl**
 Hypogynous scales glabrous or scabrid, not 3-fid 24
24. Axis of spikelet bearing the fertile glumes elongated and flexuose **18. Schoenus Linn.**
 Axis of spikelet not elongated and flexuose above the fertile glumes ... 25
25. Hypogynous bristles cut into narrow segments, appearing numerous **11. Eriophorum Linn.**
 Hypogynous bristles 3—6, not cut into narrow segments 26
26. Inflorescence of one spikelet, producing many nuts 27
 Inflorescence rarely of one spikelet; spikelets producing 1—2 nuts, rarely nuts many 28
27. Leaves present; style deciduous or, if persistent, then the base indistinguishable from the apex of the nut **13. Scirpus Linn.**
 Leaves 0; style persistent, distinguishable from the apex of the nut **14. Eloecharis R. Br.**
28. Spikelets each with several nuts **13. Scirpus Linn.**
 Spikelets each with 1—2 nuts 29
29. Styles 2... .. **22. Rhynchospora Vahl**
 Styles 3, rarely 6 or 8 30
30. Glumes spirally imbricate **24. Macrochaetium Steud.**
 Glumes more or less 2-ranked 31
31. Plants of a more or less restiaceous habit; lowest flower with a pistil which does not produce a nut **23. Tetraria Beauv.**
 Plants not of a restiaceous habit; lowest flower male or perfecting a nut ... 32
32. Lowest flower perfecting a nut **3. Carpha R. Br.**
 Lowest flower male **20. Costularia C. B. Cl.**

452 1. LIPOCARPHA R. Br., Tuckey, Narrat. Exped. Congo, p. 459 (1818)

Flowers bisexual and male or sterile. *Bracteoles* 2, very thin, scarious, parallel with the glume. *Hypogynous bristles* 0. *Stamens* 1—3. *Style* linear or 0, not dilated at the base, deciduous; branches 2—3, minute or short. *Nut* sessile, obovoid or linear-oblong in outline, unequally 3-angled.

Glabrous plants; stems with leaves at the base only and without any nodes between them and the inflorescence; inflorescence a dense head of 1—5 (rarely more) spikelets; glumes densely packed and spirally imbricate; 2 lowest glumes empty; many succeeding glumes with bisexual flowers producing nuts; uppermost glumes male or sterile.

Species about 12, found in the warmer parts of both hemispheres; 2 species recorded from Natal and the Transvaal, both of which occur in tropical Africa. (Type: *L. agentea* R. Br.)

454 2. ASCOLEPIS Nees, ex Steud. Syn. Pl. Cyp. 105 (1855)

Flowers bisexual and male or sterile. *Scale* within the glumes solitary, parallel with and longer than the glume and enclosing the flower. *Hypogynous bristles* 0. *Stamens* 2—3. *Style* small, linear; branches 2—3, linear, minute. *Nut* very small, narrowly obovoid, 3-angled or biconvex, smooth.

Stems with basal leaves only and without nodes between the leaves and the inflorescence; inflorescence a head of 1—5 spikelets; spikelets of many spirally imbricate glumes; the 2 lowest glumes empty; many succeeding glumes with bisexual flowers producing nuts; uppermost glumes male or sterile.

Species about 12, found in the warmer parts of both hemispheres; 2 species recorded from Natal and the Transvaal, both of which also occur in tropical Africa. (Type: *A. eriocaloides* (Steud.) Nees)

456 3. CARPHA Banks et Soland. ex R. Br. Prodr., p. 230 (1810)

Flowers bisexual and male or sterile. *Hypogynous bristles* 6, as long as the nut, sometimes irregular. *Stamens* 3. *Style* long, linear; branches 3, long. *Nut* sessile, ellipsoid, 3-angled, pyramidal at either end, acuminate, more or less hispid at the top.

Stems with leaves and nodes above the base; inflorescence paniculate; spikelets of 5—7 glumes; 3 lowest glumes empty; 1—2 succeeding glumes with bisexual flowers perfecting nuts; upper glumes male or empty; axis of spikelet short, not flexuose; the lowest nut-bearing glume having the next glume close over it, not separated by an elongate curved joint of the rhachilla.

Species 13, confined to the southern hemisphere (America, Australia, and Africa); 3 species in South Africa, extending from the south-western districts of the Cape Province, through Uitenhage and Albany to Pondoland.

459 4. CYPERUS Linn., Sp. Pl., ed. 1, p. 74 (1753)

Flowers bisexual and male or sterile. *Stamens* 1—3. *Style* slender, sometimes short; branches 3, long, linear, or in one South African species (*C. semitrifidus*) short, weak, or obsolete. *Nut* triangular or plano-convex, from narrow-oblong to obovate in longitudinal section, smooth.

Usually glabrous; leaves all near the base of the stem; inflorescence a terminal corymb depressed into an apparent umbel, or reduced to a single head or spikelet; spikelets of many (rarely 5—6) distichous glumes; the 2 lowest glumes empty; the succeeding glumes (3 to many) with bisexual flowers perfecting nuts; the uppermost glume with a male or sterile flower; rhachilla persistent, not disarticulating below the lowest fertile glume; fertile glumes and nuts falling seriatim, beginning with the lowest.

Species described nearly 400, found in all warm and temperate regions; 54 species in South Africa, of which number at least 26 have been recorded from tropical Africa. The native species extend from the Clanwilliam district through the coastal belt to Natal, also found in the Transvaal and Orange Free State; rare in the central districts. (Type: *C. esculentus* Linn.)

459a **5. PYCREUS** Beauv., Fl. Owar., vol. 2, p. 48, t. 86 (1807)

Flowers bisexual and male or sterile. *Stamens* 1—3; anthers not crested. *Style* slender; branches 2, linear, in a plane passing through the rhachilla. *Nut* oblong in outline or ellipsoid, compressed laterally, smooth.

Glabrous; leaves close to the base of the stem, rarely the stem partly covered with leaf-sheaths; inflorescence a corymbose panicle shortened into a false umbel or head; spikelets of many distichous glumes; the 2 lowest glumes empty; the succeeding glumes (5 to many) with bisexual flowers perfecting nuts; the uppermost glume with a male or sterile flower; rhachilla persistent, wingless, not articulating below the lowest fertile glume.

Species about 70, found in all tropical and warm temperate regions, a few extending to Canada and Queenstown; 13 species in South Africa of which number 11 are also found in tropical Africa; the native species extend from the Clanwilliam district through the coastal belt to Natal and Zululand, but are mostly in the eastern districts though some recorded from the Transvaal and the Orange Free State; 1 species recorded from Griqualand West. (Type: *P. polystachyos* Beauv.)

459b **6. JUNCCELLUS** C. B. Cl., in Hook f. Fl. Brit. Ind., vol. 6, p. 594 (1893)

Flowers bisexual and male or sterile. *Stamens* 1—3. *Style* slender; branches 2, linear, in a plane at right angles to the median plane of the spikelet. *Nut* oblong or ellipsoid, dorsally compressed, triangular, with the anterior angle flattened and smooth.

Stems from an underground creeping rhizome, with sheathing leaves at the base; spikelets of many distichous glumes; the 2 lowest glumes empty; the succeeding glumes (5 to many) with bisexual flowers perfecting nuts; the uppermost glume with a male or sterile flower; rhachilla persistent, scarcely winged, not disarticulating below the lowest fertile glume.

Species about 12, scattered in nearly all warm and temperate regions; 1 species recorded from South Africa and distributed from South West Africa along the coast to Natal; also recorded from Parys in the Orange Free State and the Kimberley district.

459c **7. MARISCUS** Gaertn., Fruct., vol. 1, p. 11 (1788)

Flowers bisexual and male or sterile. *Stamens* 2—3. *Style* with 3 linear branches. *Nut* triangular or plano-convex, narrowly oblong or elliptic or oboval in longitudinal section.

Usually glabrous; leaves all near the base of the stem, never leafless; inflorescence as in *Cyperus*; spikelets of few to many distichous glumes; the 2 lowest glumes empty; the succeeding glumes with bisexual flowers producing nutlets (less than 5 nutlets to the spike); the uppermost glume with a male or sterile flower; rhachilla winged, disarticulating below the lowest fertile glume from a cushion, falling off in one piece.

Species about 190, in all warm and warm-temperate regions; a doubtful species is recorded from Europe; 26 species found in South Africa, extending from the south-western districts of the Cape Province to Natal, Zululand, and the Transvaal; also found in some of the central districts.

461 **8. COURTOISIA** Nees, in Linnaea, vol. 9, p. 286 (1834)

Flowers bisexual and male or sterile. *Style* persistent, 3-fid. *Nut* narrowly oblong in longitudinal section, 3-angled.

Glabrous annuals; leaves all near the base of the stem, as long as the stem; inflorescence a simple or compound umbel; bracts similar to the leaves, overtopping the umbel; spikelets compressed, 4—12 together, clustered in subglobose heads, 1—10-flowered, disarticulating in one piece above the two lowest empty glumes; fertile glumes distichous, boat-shaped, narrowly winged on the keel.

Species 2, in Africa, Madagascar and India; the 1 South African species recorded from South West Africa also found in tropical Africa and in the above two countries. (Type: *C. cyperoides* Nees)

462 9. KYLLINGA Rottb., Desc. et Ic., p. 12, t. 4 (1773)

Flowers bisexual and male or sterile. *Stamens* 1—3; anthers narrow, oblong, not crested. *Style* slender; branches 2, in a plane passing through the rhachilla. *Nut* ellipsoid or oblong in outline, compressed laterally, smooth.

Glabrous, very rarely scabrous-pubescent; leaves all close to the base of the stem; inflorescence a head of 1—3 terminal sessile spikes supported by 3—6 leaf-like bracts; spikes ovoid or cylindric, dense, with many small compressed spikelets; spikelets of 4—7 distichous glumes, 1—4-flowered; the lowest (or 2 lowest) flower bisexual and perfecting a nut; upper flowers sterile or male or uppermost glume empty; 2 lowest glumes smaller, empty; rhachilla wingless, falling off in the fruit by disarticulation from a cushion below the lowest fertile flower.

Species between 50 and 60, found in all warm countries, but mostly in Africa; 10 species recorded from South Africa, extending from the Transvaal and Zululand through the coastal belt to the Malmesbury district; also recorded from some of the central districts and Griqualand West.

465 10. FICINIA Schrad., in Comm. Gotting. vol. 7. p. 143 (1832)

Flowers bisexual and male or sterile. *Hypogynous bristles* 0. *Stamens* 2—3. *Ovary* on a minute obpyramidal gynophore, surrounded by a small-lobed somewhat fleshy outgrowth; style glabrous, linear, passing gradually into the nut; branches 3, rarely 2. *Nut* triangular or rarely dorsally compressed.

Stems with leaves at the base only or leafless; inflorescence a head, or heads umbellate, or spikelets solitary; spikelets of many (rarely few) spirally imbricate glumes; the lowest 1—2 glumes empty; many or several succeeding glumes bisexual and perfecting nuts; the uppermost glumes male or sterile.

Species 58; about 55 species almost entirely confined to the south-western coastal districts of the Cape Province; a few recorded from Namaqualand and from the eastern districts to Natal; 3 species found in tropical Africa. (Type: *F. filiformis* (Lam.) Schrad.)

466 11. ERIOPHORUM Linn., Syst., ed. 1, p. 52 (1753)

Characters as in *Scirpus* but hypogynous bristles 6, strap-shaped and cut down to the base into several narrow segments which elongate in fruit so that the spikelet becomes tufted.

Species about 15 found in the north temperate or Arctic regions; 2 species found in India and China; 1 species recorded from the Transvaal. (Type: *E. vaginatum* Linn.)

467 12. FUIRENA Rottb., Descr. et Ic. Pl., p. 70, t. 19 (1773)

Flowers bisexual and male or sterile. *Hypogynous bristles* 6 or more. *Stamens* 3. *Style* linear, often short, with the base usually persistent on the nut; branches 3, long. *Nut* sessile, 3-angled, obovoid or narrowly obovoid, falling off and enclosed by the 3 inner hypogynous bristles when these are present.

Rhizomes (in the South African species) woody, horizontal; stems with nodes and leaves throughout their length (except in one species); leaves with ligules;

inflorescence a paniculate-corymb, elongated, thin, with remote lower branches, often reduced nearly to a subterminal head, sometimes to a few (or 3) spikelets; spikelets of many imbricate glumes; the 2 lowest glumes empty; many succeeding glumes with bisexual flowers, aristate, hairy; uppermost glumes male or sterile.

Species about 33, in all warm countries; 10 species in South Africa extending from the Transvaal, Natal, and Basutoland, through the eastern districts to the south-western districts of the Cape Province; also recorded from the Graaff Reinet, Queenstown, and Aliwal North districts. (Type: *F. umbellata* Rottb.)

468 13. SCIRPUS Linn., Sp. Pl., ed. 1, p. 47 (1753)

Flowers bisexual and male or sterile. *Hypogynous bristles* usually retrorse-scabrid, very rarely plumose, sometimes 0. *Stamens* 1—3. *Ovary* sessile or stalked; style long and linear, or hardly any, deciduous or if persistent the base undistinguishable from the top of the nut; branches 2—3, linear. *Nut* obovoid or oblong, 3-angled or biconvex, without a beak.

Stems without nodes between the basal leaves and the inflorescence; inflorescence a head or a corymb that is depressed into an apparent umbel, or spikelet solitary; spikelets of many, rarely few, spirally imbricate glumes; lowest 1—2 glumes empty; many or succeeding glumes bisexual and perfecting nuts; uppermost glumes male or sterile.

Species described between 200 and 250, spread throughout the world; about 60 species recorded from South Africa, many of which also occur in tropical Africa. The South African species extend from Natal, through the coastal belt into Namaqualand; rarer in the central districts; also found in the Orange Free State and the Transvaal. (Type: *S. sylvaticus* Linn.)

469 14. ELEOCHARIS R. Br., Prodr., p. 224 (1810)

Flowers bisexual and male or sterile. *Hypogynous bristles* 3—7, scabrous, or 0 (in the South African species). *Stamens* 1—3. *Style* thickened at the base, distinguishable from the apex of the nuts, persistent; branches 2—3. *Nut* triangular or flat (dorsally compressed).

Glabrous; stem with one terminal spikelet; leaves 0; uppermost sheath truncate or very shortly produced on one side; spikelet of many spirally imbricate glumes; lowest 1—2 glumes empty, shorter than the spikelet; many succeeding glumes with bisexual flowers perfecting nuts; the uppermost glumes male or sterile.

Species about 172 scattered over nearly the whole world, prevalent in America; 5 species in South Africa, extending from the Transvaal and Natal, through the eastern and south-eastern districts to the Malmesbury district; recorded also from some central districts to Griqualand West.

471 15. FIMBRISTYLIS Vahl, Enum., vol. 2, p. 285 (1806)

Flowers bisexual and male or sterile. *Hypogynous bristles* 0. *Stamens* 1—3. *Style* 2—3-fid, villous or glabrous, with the base enlarged and distinct from the nut by a constriction or a line and continuous with and caducous with the style. *Nut* 3-angled or biconvex, according as the style-branches are 3 or 2.

Glabrous or hairy; stolons 0 or very short; leaves all near the base of the stem, sometimes 0; inflorescence a simple compound or congested umbel or a single spikelet; spikelets of many glumes spirally imbricate, very rarely subdistichous; lowest 1 or 2 glumes empty; many or several succeeding glumes bisexual and perfecting nuts; uppermost glumes male or sterile.

Species about 150, found in all hot and warm temperate areas, especially plentiful in south-eastern Asia and north-eastern Australia; 8 species recorded from South Africa all of which are also found in tropical Africa; the South African species found in Natal, through the eastern districts to Albany and then to Clanwilliam; also recorded from the Orange Free State and the Transvaal. (Type: *F. dichotoma* (L.) Vahl)

471a 16. BULBOSTYLIS Kunth, Enum. Pl., vol. 2, p. 205 (1837)

Flowers bisexual and male or sterile. *Hypogynous bristles* 0. *Stamens* 2—3. *Style* glabrous, linear, deciduous, leaving its enlarged base as a dark coloured button on the nut; branches 3, very rarely 2. *Nut* obovoid, very obtuse or truncate, pallid till quite ripe.

Stolons 0; stems slender; leaves all near the base of the stem, very narrow (nearly always setaceous or capillary), often hairy, nearly always ciliate-hairy in the mouth of the sheaths; inflorescence a terminal simple or compound umbel, or reduced to a head or one spikelet; spikelet of many spirally imbricate glumes; the lowest 1—2 glumes empty; many or succeeding glumes bisexual and perfecting nuts; the uppermost glumes male or sterile; flower glumes nearly always pubescent on the back.

Species about 100, in the tropics or warmer regions of the world, especially in Africa and America; one species extends north to Canada; 15 species occur in South Africa, 10 of which also occur in tropical Africa: the South African species extend from the Transvaal, Natal, and Basutoland to the Alexandria district; 1 species recorded from the Cape.

475 17. TRIANOPTILES Fenzl in Endl. Gen., p. 113 (1836)

(*Ecklonea* Steud.)

Spikelets of two kinds, those of the aerial inflorescences bisexual, those partially hidden among the basal leaves female. *Bisexual spikelets* greenish in colour, cymose, with 3—5 more or less distichous bracts and in most cases two perfect flowers associated with the 2 uppermost bracts. *Perianth scales* 3, usually terminated by 3 stiff bristles or occasionally the 2 lateral bristles wanting, hairy at the base. *Stamens* 3. *Style* with 3 long branches. *Fruit* trigonous. *Female spikelet* of 2—4 tightly sheathing bracts and a terminal flower, with the basal portion subterranean with only the tip of the uppermost bract and the style-branches projecting. *Perianth-scales* 0. *Fruit* more or less spherical.

Small tufted annuals.

Endemic; species 3, recorded from the Cape and Stellenbosch districts of the Cape Province. (Type: *E. capensis* Steud.)

477 18. SCHOENUS Linn., Sp. Pl., ed. 1, p. 42 (1753)

Flowers bisexual and male or sterile. *Hypogynous bristles* various or 0 (in the only South African species 3—5, smaller than the nut and more or less fringed). *Stamens* 1—6 (3 in the South African species). *Style* linear, continuous with the nut; style-base small, conic, or hardly any; branches 3, linear. *Nut* sessile or stalked, 3-angled or the anterior angle rounded.

Stolons 0; stems stoutly tufted; leaves near the base; inflorescence a panicle, corymb, or a head; spikelets of 6—10 glumes; lowest 1—6 glumes empty; 1—3 succeeding glumes with bisexual flowers perfecting nuts; upper glumes close together, male or empty; the part of the axis bearing the fertile glumes is elongated, flexuose, so that the lowest nut stands in an excavation or deep bend of it.

Species about 64, mostly Australian; 1 species found in Europe is recorded from the Cape Peninsula and the Worcester district and has also been recorded from tropical Africa. (Type: *S. nigricans* Linn.)

477a 19. EPISCHOENUS C. B. Cl., in Th. Dur. & Schinz Consp. Fl. Afr., vol. 5, p. 657 (1895)

Flowers bisexual and male. *Hypogynous bristles* 0. *Stamens* 3—5. *Style* deciduous; branches 3. *Nut* subglobose, obscurely 3-angled, smooth, marble-white.

Stem tufted, conspicuously quadrangular at the top, with nodes near the base only; inflorescence a linear raceme of 4 spikelets; spikelets 1—2 in each bract, of 7 subdistichous glumes; 3 lowest glumes empty; 4th and 5th glumes with male flowers; 6th glume with a bisexual flower, perfecting a nut; 7th glume small, empty; axis of spikelet above the insertion of the nut elongated, thickened, curved round the nut.

Endemic; species 1, recorded from the Caledon and Riversdale districts. (Type: *E. quadrangularis* C. B. Cl.)

482 **20. COSTULARIA** C. B. Cl., in Th. Dur. & Schinz Consp. Fl. Afr., vol. 5, p. 658 (1895)

Flowers bisexual and male. *Hypogynous bristles* 5 or 6, slender. *Stamens* 3. *Style* long; branches 3. *Nut* oblong-obovoid, 3-angled, crowned by the pyramidal persistent style-base.

Rather stout plants; stems with nodes bearing leaves throughout their whole length; inflorescence an oblong compressed panicle of many spikelets; spikelets of several or many subdistichous glumes; lowest 3—4 (or more) glumes empty; next glume with a male flower; glume above the male flower containing a bisexual flower (rarely 2 glumes with bisexual flowers) which perfects a nut; upper glumes male or empty; axis of spikelet above the insertion of the nut neither elongated nor thickened and curved.

Species 11, found in the Mascarene Islands, Australia, and South Africa; 2 species recorded from the Cape Peninsula, Knysna, Natal, and the northern Transvaal.

489 **21. CLADIUM** P. Br., Hist. Jamaica, p. 114 (1756)

Flowers bisexual and some reduced. *Hypogynous bristles* 0 (in the South African species), or rarely present and small. *Stamens* 2—3. *Style* linear, thickened at the base; branches 3, long. *Nut* small, 3-angled, crowned by the enlarged style-base and continuous with it, not distinguishable by a transverse constriction or line.

Mostly robust plants of varied habit; inflorescence usually a long panicle, sometimes shortly corymbose, never umbellate; spikelets of 4—11 spirally imbricate glumes, perfecting 1—3 (rarely more) nuts; 3—4 lowest glumes empty; next glume containing a bisexual flower perfecting a nut; uppermost glumes with reduced flowers; rachilla not elongated above the lowest fertile glume.

Species between 50—60, mostly insular or near the sea; 1 species, which is almost cosmopolitan, found in South Africa and extends from the south-western coast districts to Natal, Zululand, and the Transvaal; also found in Griqualand West.

492 **22. RHYNCHOSPORA** Vahl, Enum., vol. 2, p. 229 (1806)

Flowers bisexual and male or sterile. *Hypogynous bristles* 6, as long as the nut, linear (scabrous in the South African species), or 0, or various (in extra South African species). *Stamens* 2—3. *Style* long, linear, dilated at the base, persistent; branches 2, long-linear or nearly obsolete. *Nut* obovoid to narrowly oblong in outline, flattened.

Stems (in the South African species) with leaves and nodes between the base and the inflorescence; inflorescence a head of one or more spikelets; spikelets of spirally imbricate glumes; 3—4 lowest glumes empty; 1—2 succeeding glumes with bisexual flowers perfecting nuts; the uppermost glumes sterile or male.

Species about 200, found throughout the world, especially abundant in America; 4 species recorded from South Africa, extending from Natal to Pondoland; one species found in the Cape Peninsula, the Humansdorp district, and in the Transvaal; 3 of the native species also occur in tropical Africa. (Type: *R. alba* (L.) Vahl)

494 23. TETRARIA Beauv., in Mem. Inst. Fr., vol. 2, p. 54 (1812)

Flowers bisexual and male or very rarely unisexual. *Hypogynous bristles* various or 0. *Stamens* 3, sometimes 4, more rarely 6 or 8; anthers crested, often eared at the base. *Style* continuous with the nut, dilated and scabrous at the base, linear; branches 3—4, in a few species 6 or 8, long, linear. *Nut* obovoid, 3-angled or sub-4-angled.

Plants of a more or less restiaceous habit; leaves all basal or produced up the stem; spikelets 2-flowered, of several (or many) subdistichous glumes; lowest 4—10 glumes empty; the next glume with a male flower or very rarely empty; next glume with a bisexual flower perfecting a nut; upper glume often small or 0; spikelets very rarely unisexual; axis of the spikelet not elongated or curved round the nut.

Species 38, endemic (except *T. circinalis* C. B. Cl. which is also found in East Africa), the majority confined to the south-western districts of the Cape Province; a few found in the Ceres district; 1 species extends eastwards as far as Pondoland; a few species found in the Somerset East and Queenstown districts. (Type: *T. thurii* Beauv.)

494a 24. MACROCHAETIUM Steud., Syn. Pl. Cyp., p. 159 (1855)

Flowers bisexual, sometimes also male flowers present. *Hypogynous bristles* 0, long, linear. *Stamens* 6. *Style* with a dilated base forming a beak on the nut; branches 3, long. *Nut* rather small, obovoid, 3-angled, sessile.

Habit that of the large species of *Tetaria*; spikelet of 4—5 spirally imbricate glumes, with 1 perfect flower; an upper male flower sometimes present.

Endemic; species 1, extending from the Cape Peninsula to the Uitenhage district. (Type: *M. dregei* Steud.)

500 25. CHRYSITRIS Linn., Mant., vol. 2, p. 165 (1771)

Flowers unisexual. *Hypogynous bristles* 0. *Stamen* 1; anther linear, with a long-linear crest. *Style* long, linear, not dilated at the base; branches 3, linear. *Nut* ovoid, subglobose, pale, longitudinally many-striate.

Leaves all basal; inflorescence a single spikelet bearing a single terminal female flower, surrounded by a number of one-staminate flowers.

Endemic; species 2, extending from the Cape Peninsula to the George, Humansdorp, and Uitenhage districts. (Type: *C. capensis* Linn.)

512 26. ERIOSPORA Hochst., ex A. Rich. Tent. Fl. Abyss., vol. 2, p. 508 (1851)

Flowers unisexual. *Hypogynous bristles* numerous, linear. *Stamens* 1—3; anthers not crested. *Style* linear, widening at the base into an elongated conical 3-angled portion which is situated on the nut as a beak; branches 3. *Nut* from an ovoid base, tapering into the beak.

Perennials, with linear leaves; leaves resembling those of grasses; stems with nodes their whole length bearing leaves or bracts; inflorescence usually an elongated panicle (2—3 in. long in the South African species); spikes on slender peduncles; spikelets mostly bearing flowers of both sexes, 2—3-flowered, about 4-glumed; the lowest flower female; the upper 1—2 male or sterile; glumes ovate, boat-shaped, obscurely distichous, very minutely mucronulate.

Species 7, scattered through tropical Africa and Madagascar; 1 species recorded from the Pretoria and Witwatersrand districts and the northern Transvaal. (Type: *E. abyssinica* Hochst.)

- 515** **27. SCLERIA** Berg., in Vet. Akad. Handl. Stockh., vol. 26, p. 142, t. 4 (1765)

Flowers unisexual. *Hypogynous bristles* 0. *Stamens* 1—3; anthers often mucronate. *Style* linear, not dilated at the base; branches 3, linear. *Nut* bony, ovoid, on a gynophore; apex of gynophore often dilated into a disc, simple, trigonous, or compound, or with evolute lobes.

Stems generally 3-angled, with nodes throughout their length; basal leaves and bracts sheathing the stem, narrow, often very scabrous and cutting on the margins; inflorescence panicle, often scattered; spikelets bearing flowers of one or both sexes; the bisexual spikelets with one basal flower and one or few male flowers above; female spikelet like the bisexual spikelet but the upper male portion reduced to 1 or 2 empty glumes or wanting; male spikelet like the bisexual spikelet but without the basal female flower and often with more numerous male flowers.

Species about 200, found in all tropical and subtropical regions except the Mediterranean and the Orient; 12 species recorded from South Africa extending from Natal and the Transvaal to the Albany district; most of these are also found in tropical Africa. (Type: *S. mitis* Berg.)

- 521** **28. SCHOENOXIPHIUM** Nees, in Linnaea, vol. 7, p. 531 (1832)

Flowers unisexual. *Hypogynous bristles* 0. *Stamens* 1—3. *Style* 3-fid. *Nut* 3-angled or flattened.

Stems nodose; inflorescence a long panicle with distant axillary branches; spikelets numerous, bearing flowers of one or both sexes; bisexual spikelet with one female flower at the base and several male flowers on a stalk springing obliquely within the so-called glume of the female flower; glume of female flower free or connate a very little way up from the base; axis of spikelet below the male inflorescence flattened and scabrous on the margin.

Endemic; species 8, mainly confined to the south-eastern and eastern districts, but extend to the Cape Peninsula; also recorded from the Orange Free State. (Type: *S. capense* Nees)

- 525** **29. CAREX** Linn., Sp. Pl., ed. 1, p. 972 (1753)

Flowers unisexual. *Hypogynous bristles* 0. *Stamens* 1—3. *Style-branches* 2—3. *Nut* trigonous or flattened.

Perennial herbs; leaves grass-like; inflorescence usually a pseudo-spikelet, more rarely a true compound spikelet; in the latter case the axis of the so-called spikelet is distinctly branched with the branches bearing a female flower in the axil of the first floral glume and male flowers in the succeeding glumes, thus forming a true compound spikelet with each lateral branch a true spikelet; in the former case the lateral branches are suppressed and a pseudo-spikelet is formed and the female flower appears to arise almost directly from the main axis and is surrounded by a more or less closed structure—the utricle; pseudo-spikelets often with female flowers only, but may have female flowers in the lower portion and male flowers in the upper portion, forming a so-called androgynous spikelet.

Described species about 1,700, scattered throughout the world from the Arctic Circle to the southernmost limits of the phanerograms; 14 species recorded from South Africa, widely distributed from Little Namaqualand, through the coastal belt, to Natal and into the Transvaal; a few species occur in the central districts. (Type: *C. hirta* Linn.)

14. PALMAE

Flowers unisexual or bisexual or polygamous. *Sepals* 3, free or connate. *Petals* 3, free or connate, usually valvate in the male flowers and imbricate in the female flowers. *Stamens* 3 or 6, usually 6 in 2 series, rarely numerous;

anthers 2-theous, opening by longitudinal slits. *Ovary* superior, rudimentary or absent in the male flowers, 1—3- (rarely 4—7-) chambered or gynaeceum of 3 distinct carpels or carpels connate at the base; ovule solitary and erect or pendulous from the inner angle of each carpel or chamber of the ovary. *Fruit* a 1—3-locular drupe or hard berry or of 1—3 carpels; pericarp smooth, rough, or clothed with shining scales that imbricate downwards. *Seed* free or attached to the endocarp; endosperm horny or bony, solid or ruminate; embryo small, in a small cavity near the surface of the endosperm.

Dioecious or monoecious plants, shrubs, or trees, sometimes climbing, naked or prickly, rarely pubescent; leaves alternate, usually in a terminal cluster or scattered in the climbing species, pinnatisect or palmate, rarely simple or bipinnate, plaited in bud, with the segments or leaflets often sharp at the apex and prickly on the margins or midrib; rhachis often expanded at the base into a fibrous sheath; inflorescence a panicle or spike enclosed in one or more larged sheathing bracts (spathes); flowers usually 3-bracteate.

Genera about 140; species about 1,200 widely spread through the tropics and subtropics of both hemispheres.

- | | | |
|--|----------------------------|---|
| 1. Leaves fan-shaped | 2. <i>Hyphaene</i> Gaertn. | |
| Leaves pinnate or pinnatisect | | 2 |
| 2. Fruit with many thick descending imbricate scales | 3. <i>Raphia</i> Beauv. | |
| Pericarp fleshy or divided into small granular clusters | | 3 |
| 3. Stamens 6 | 1. <i>Phoenix</i> Linn. | |
| Stamens 8—16 | 4. <i>Jubaeopsis</i> Becc. | |

528 1. PHOENIX Linn., Sp. Pl., ed. 1, p. 1188 (1753)

Plants dioecious. *Male flowers* oblong. *Calyx* cupular, 3-toothed. *Petals* 3, obliquely ovate, valvate. *Stamens* 6; filaments connate at the base. *Ovary* rudimentary or 0. *Female flowers* globose. *Calyx* as in the male. *Petals* 3, rounded, concave, imbricate. *Staminodes* 6. *Carpels* 3, free, with an erect ovule in each ovary but only one fertile; stigma sessile. *Fruit* oblong in outline, 1-seeded, with a fleshy pericarp; stigma terminal. *Seed* oblong in outline, grooved on the ventral surface.

Trees; leaves pinnate; leaflets lanceolate or ensiform, sides induplicate; the lower pinnae armed with spines; spathe solitary; spadices usually several, interfoliar, erect or drooping in fruit, branched; flowers small, yellow.

Species about 17, found in tropical and subtropical Asia and Africa; 1 species in South Africa, recorded from the eastern districts and Natal and extends as far south as the Bushman's River; also occurs in tropical Africa. (Type: *P. dactylifera* Linn.)

553 2. HYPHAENE Gaertn., Fruct., vol. 1, p. 28, t. 10, f. 2 (1788)

Plants dioecious. *Male flowers*:—*Calyx* 3-lobed, imbricate. *Petals* ovate, concave, connate into a short stalk at the base, glumaceous, imbricate. *Stamens* 6; filaments short. *Ovary* 0. *Female flowers* shortly pedicelled, larger than the male. *Sepals* ovate or orbicular, obtuse, imbricate. *Petals* slightly smaller than the sepals, widely ovate, obtuse, imbricate. *Staminodes* 6, connate into a membranous cup. *Ovary* subglobose, obscurely 3-lobed, 3-chambered, with a single ovule in each chamber; stigmas 3, sessile. *Fruit* sessile or stalked, 1-locular; stigma basal; pericarp divided into small granular clusters; endocarp woody. *Seed* adnate to the endocarp which is intruded at the base; raphe with reticulate branches; endosperm bony.

Medium or large trees, unarmed or slightly spiny; leaves fan-shaped; petiole ending in a small ligule; spadices with cylindric spathes; branches alternate with subfastigate branchlets; bracts semicircular, very densely imbricate; bracteoles membranous; flowers immersed in the branchlets, the male in pairs, the female solitary.

Species about 11, dispersed through tropical Africa, Arabia, and the Mascarene Islands; 1 species found in Natal and the northern Transvaal; also occurs in tropical Africa. (Type: *H. coriacea* Gaertn.)

559

3. *RAPHIA* Beauv., Fl. Owar., vol. 1, p. 75 (1804).

Plants monoecious. *Male flowers*:—*Calyx* tubular, with a truncate or minutely denticulate mouth. *Corolla-tube* curved, contracted, solid and 3-angled at the base; lobes 3, linear-lanceolate, valvate. *Stamens* 6—16, inserted at the base of the perianth; filaments connate at the base. *Ovary* 0. *Female flowers* larger than the male. *Calyx* and *corolla* as in the male. *Staminodes* in a 6- to many-toothed cup. *Ovary* ovoid, 3-chambered with a single ovule in each chamber. *Fruit* large, ovoid or ellipsoid, or oblong in outline, beaked, 1-locular, 1-seeded; stigma terminal; pericarp covered with thick descending imbricate scales. *Seed* oblong in outline, furrowed; endosperm bony.

Stems short or tall, simple or branched, unarmed or the sheaths armed; leaves terminal, suberect, pinnatisect; segments linear-lanceolate, with recurved setae or thorns on the margins at the base; petiole cylindric or convex on the back, flat on the face; sheath short, with the margins long-fibrous; spadices large, pendulous, cylindric, densely racemose, without a common spathe; bracts cup-shaped; flowers elongated, long-exserted; the male at the base of the ultimate branches of the spadix; the female at the apex.

Species about 13, found in tropical Africa and Madagascar; 1 species found in South America and 1 found in Zululand.

665a

4. *JUBAEOPSIS* Becc., in Webbia, vol. 4, p. 171 (1913)

Plants monoecious. *Male flowers* sessile, asymmetric. *Sepals* free, squamiform, small, triangular, distinctly imbricate at the base. *Petals* much larger than the sepals, coriaceous, acuminate, valvate. *Stamens* 8—16, slightly shorter than the petals; filaments terete, not inflexed at the apex; anthers linear dorsifixed. *Ovary* rudimentary, columnar above, slightly 3-toothed. *Female flowers* ovate-conical. *Sepals* broadly imbricate. *Petals* convolute-imbricate, with an obtuse apiculus. *Staminodes* rudimentary, short, annular, scarcely toothed. *Ovary* ovoid-conical, minutely 3-chambered at the very base, sometimes only 2-chambered by abortion, with the septa soon disappearing, with a single ovule in each chamber. *Fruit* globose, 1-seeded, with 3 pores above the middle and with a single band within; stigma terminal; pericarp fibrous; endocarp bony. *Seed* globose; endosperm cartilaginous, oily, with a conspicuous cavity; embryo opposite one of the pores.

A tree; leaves pinnatisect; leaf-segments joined, ensiform, reduplicate at the base, unequal, bifid or 2-toothed at the apex; spadices between the leaves, racemose; inner spathes fusiform, opening ventrally, woody, smooth outside; male flowers solitary, numerous in the upper part of the branches; female flowers sessile in the lower part, alternate, stipitate, with a male flower on either side.

Endemic; species 1, recorded only from Pondoland. (Type: *J. caffra* Becc.)

15. ARACEAE

Plants monoecious, rarely dioecious. *Flowers* bisexual or unisexual, with or without a perianth, sessile on a spadix enclosed within or adnate to or subtended by a green or coloured spathe. *Spadix* usually bearing flowers of

both sexes or rarely flowers of one sex only, with or without a terminal barren appendix and with or without neuter organs on various parts of it or entirely covered with bisexual flowers. *Perianth*, when present, of 4—6 free segments or connate into a truncate cup. *Stamens* 4—6, rarely more or fewer (when the male flowers have no perianth, the stamens are so crowded that the number belonging to each flower cannot be determined), opposite the perianth-segments, free or connate; filaments 0, or broad and flat or rarely filiform; anthers opening by pores or slits. *Staminodes* sometimes present among the female and below the male flowers. *Ovary* superior or immersed in the spadix, 1- to many-chambered, with 1 to many ovules in each chamber with axile or parietal or apical placentation; style present or none; stigma entire or lobed. *Fruit* a 1- to many-seeded berry, sometimes coriaceous and rupturing. *Seed* with or without endosperm.

Herbs or shrubs with watery or milky juice, rarely woody and climbing, with a tuberous or elongated rhizome; leaves alternate, radical or cauline, entire or variously divided, often hastate or sagittate, usually with sheathing petioles; spathe open to the base or the lower part convolute or tubular, wholly deciduous or persistent or only the tubular part persistent.

Genera about 113, with about 1,000 species chiefly concentrated in the tropics.

1. An aquatic herb; female part of the spadix adnate to the spathe

3. *Pistia* Linn.

Terrestrial herbs with tuberous rootstocks; spadix free 2

2. Spathe tubular below, at length deciduous 2. *Stylochiton* Lepr.

Spathe convolute below, persistent... 1. *Zantedeschia* Spreng.

748 1. ZANTEDESCHIA Spreng., Syst., vol. 3, p. 765 (1826)

(*Richardia* Kunth)

Flowers unisexual. *Perianth* 0. *Male flowers* of free crowded stamens with sessile anthers opening by terminal pores. *Female flowers* of naked ovaries. *Ovaries* in several spirals, subglobose, angular from mutual pressure, 2—3-chambered, with 2—4 ovules in each chamber on axile placentas; style short or almost 0; stigma discoid. *Fruit* a 1—3-locular berry, with 1—2 seeds in each loculus. *Seed* subglobose or ovoid; testa rather thin; endosperm copious.

An African genus of about 8 species, mostly South African, chiefly in the north-eastern and eastern districts, extending to Aliwal North and in the coast belt to the Cape Peninsula; 2 species occur in tropical Africa. (Type: *L. aethiopica* (L.) Spreng.)

764 2. STYLOCHITON Lepr., in Ann. Sc. Nat., Ser. 2, vol. 2, p. 184 (1834)

Flowers unisexual. *Female flowers* free or connate in a single cycle or in 2—5 spirals, crowded, laterally compressed or angular from mutual pressure; the uppermost flowers often imperfectly bisexual. *Perianth* gamophyllous, cupular or suburceolate, truncate. *Staminodes* 0. *Ovary* superior or inferior, 1-chambered or 2—4-chambered in the lower part; ovules 2 to several in each chamber; style exserted; stigma discoid-capitate. *Male flowers* numerous. *Perianth* as in the female flowers, but less deep and not contracted at the mouth. *Stamens* 4, inserted at the base of a rudimentary ovary, exserted.

Perennial herbs with the habit of *Arum*; rhizome stout, fleshy, nodose or ringed; leaves all radical, petiolate, cordate or sagittate or hastate or rarely entire at the base, contemporary with the flowers or appearing after them; peduncle

terminal or axillary, solitary, short; spathe tubular below; limb expanded or hooded, at length entirely deciduous; spadix bearing male and female flowers, free, usually with a naked space between the male and female parts or the base of the male part more or less interrupted, without neuter organs or appendix.

Species about 10, all African; 2 species recorded from the Transvaal and Natal. (Type: *S. hypogeum* Lepr.)

791

3. PISTIA Linn., Sp. Pl., ed. 1, p. 963 (1753)

Flowers unisexual. *Perianth* 0. *Male inflorescence* a stipitate whorl of 3—8 flowers, each flower composed of 2 connate 2-theous anthers opening by short slits. *Female inflorescence* of a single ovary; ovary apparently arising from the back of the spathe, very oblique, 1-chambered, with numerous basal ovules; style oblique, erect from the top of the ovary; stigma capitate. *Fruit* ellipsoid, with a thin pericarp, many-seeded. *Seed* more or less oblong in outline, truncate at each end, depressed at the apex and with an operculum closing the micropyle, rugulose; endosperm present.

A floating stoloniferous stemless herb, with a tuft of fibrous roots; leaves in a rosette, with flabellate veins raised beneath; spathes axillary, small, tubular below, with the limb open, oblique, constricted on each side at its base; spadix shorter than the spathe, bearing male and female flowers, with the female part adnate to the back of the spathe, and the male part free, stipitate, having two neuter organs at its base; the upper cup-shaped or frill-like; the lower suborbicular or subreniform in outline, with the sides bent inwards or downwards.

Species 1, found throughout the tropical and subtropical regions of the globe in still fresh water; recorded from Natal. (Type: *P. stratiotes* Linn.)

16. LEMNACEAE

Flowers very minute, seated in a cavity at the margin or in the upper surface of the frond, consisting of 1—2 stamens accompanied by a sessile ovary, either naked or enclosed in a membranous spathe which ruptures as the stamens mature. *Stamens* exerted from the frond; anthers 1—2-theous. *Ovary* 1-chambered, with 1 or several basal ovules, narrowed into a style or with a subsessile stigma. *Fruit* 1- to several-seeded, indehiscent or opening transversely. *Seed* minute; endosperm present or absent.

Small or minute gregarious floating plants consisting of suborbicular elliptic, obovate, oblong, or linear fronds; fronds flat on both sides or more or less convex beneath, sometimes as thick as broad, rootless or producing one or more roots from the middle of the under surface.

Genera 2; species about 21, found in still water in all warm and temperate countries.

- | | | | | |
|---|-----|-----|-----|--------------------------|
| Frond with one or more roots; flowers seated in a cavity at the margin of the frond | ... | ... | ... | 1. <i>Lemna</i> Linn. |
| Frond rootless; flowers seated in a cavity in the upper surface of the frond | ... | ... | ... | 2. <i>Wolffia</i> Horkel |

795

1. LEMNA Linn., Sp. Pl., ed. 1, p. 970 (1753)

Flowers very minute, very rarely seen in some of the species, seated in a cavity at the margin of the frond and enclosed in a minute membranous spathe. *Stamens* 1—2; anthers 2-theous, with the thecae opening by transverse slits.

Fronds small or minute, with one or more roots on the under surface, floating on still water, thin and flat, or flat above and more or less convex beneath, orbicular, elliptic, oblong, or spatulate in outline, entire or in one species minutely denticulate on the margin; roots tipped with a distinct sheath-like root-cap.

Species 9, found in all warm and temperate countries; 2 species in South Africa, extending from Clanwilliam along the coastal belt into Natal. (Type: *L. minor* Linn.)

796 2. *WOLFFIA* Horkel ex Schleiden in *Linnaea*, vol. 13, p. 389 (1839)

Flowers rarely seen, microscopic, seated in a cavity on the upper surface of the frond, without a spathe. *Stamen* 1; anther 1-thecous, opening by a slit across the top; the valves becoming reflexed.

Fronds small or minute, entirely without roots, but in 2 species a root-like hair, quite destitute of a root-cap, is developed from the under surface, floating on still water, thin and flat or as thick as broad, subglobular, hemispherical, ellipsoidal or elliptic or oblong or linear in outline, entire or rarely minutely toothed at the margin or end of the frond.

Species about 12, found in all warm and temperate countries; 2 species recorded from the Knysna district and from Natal and the Transvaal.

17. FLAGELLARIACEAE

Flowers regular, bisexual or unisexual. *Perianth* 6-partite, persistent; segments in 2 rows, subpetaloid or scarious. *Stamens* 6, hypogynous or shortly adnate to the base of the perianth-segments; filaments free; anthers 2-thecous, introse, opening lengthwise by slits. *Ovary* superior, 3-chambered, with a single ovule in each chamber; style short or none; stigma 3-lobed and sessile or of 3 linear spreading branches. *Fruit* a 1—3-seeded berry. *Seed* with a crustaceous testa and a copious starchy endosperm; embryo minute.

Robust herbs, bearing leaves up to the base of the inflorescence, sometimes climbing by means of tendrils at the tip of the leaves; leaves alternate, elongate, sheathing at the base; inflorescence a terminal panicle; flowers sessile or subsessile.

Genera 3, with about 8 species confined to the warm regions of the Old World.

798 *FLAGELLARIA* Linn., *Sp. Pl.*, ed. 1, p. 333 (1753)

Flowers bisexual. *Perianth* subpetaloid; segments oblong, obtuse, with the 3 outer slightly shorter than the 3 inner. *Stamens* 6, hypogynous; filaments ultimately long and much exserted. *Ovary* with a short style and 3 linear segments. *Berry* 1- (rarely 2-) seeded.

Stems sarmentose, climbing by means of the tendril-tipped leaves; panicle terminal; flowers small, spicate at the ends of the ultimate branchlets of the panicle.

Species 3, one African, one in Fiji, and the third widely dispersed in the tropics of the Old World, but apparently not occurring on the continent of America. The South African species extends southwards from the tropics to East London. (Type: *F. indica* Linn.)

18. RESTIONACEAE

Plants dioecious, rarely monoecious. *Flowers* unisexual, very rarely bisexual. *Perianth* glumaceous, usually of 6 segments in 2 series, occasionally of less, rarely absent; segments all similar or the outer different from the inner; outer lateral segments frequently conduplicate and more or less keeled; inner segments usually rounded on the outer side. *Stamens* 3, opposite the inner perianth-segments; filaments very slender; anthers 1-thecous. *Rudimentary ovary* in the male flower with 2 or 3 imperfectly developed

styles or absent. *Female inflorescence* usually like the male except in most of the 1-flowered species. *Staminodes* 2 or 3, opposite the inner perianth-segments or absent. *Ovary* superior, 3-chambered or 1—2-chambered by abortion, with a solitary pendulous ovule in each chamber; styles 1 or 2 or 3, free or more or less united from the base upwards. *Fruit* a 2—3- (or by abortion 1-) seeded capsule or nut.

Perennial rush or sedge-like herbs, with a tufted or creeping rootstock densely covered with scaly sheaths; stem erect or rarely reclining, simple or branched, terete, quadrate or compressed, solid or fistular, with a leaf-sheath at each node; leaf-sheaths usually convolute, free at the margins, rarely produced at the apex into a leaf-like mucro, deciduous or persistent; inflorescence spike-like or branched, alike or different in the sexes; spikelets usually many, often solitary, 1- or few- or many-flowered, each usually with a sheath-like spathe at the base.

Genera about 20 with about 230 species, for the most part confined to the south-western portion of the Cape Province, but also found in the south-western portion of Australia and in New Zealand and Tasmania. One species has been recorded from tropical Africa, one from Cochin China, and one from Chili.

1. Flowers bisexual; plants rarely monoecious but, if so, then fruit a nut
 12. *Phyllocomos* Mast.
 Flowers unisexual; plants dioecious, very rarely monoecious but, if so,
 then fruit a capsule 2
2. Ovary 2-, 3- (or rarely by abortion 1-) chambered; fruit a 1—3-seeded
 capsule 3
 Ovary 1-chambered; fruit a nut 4
3. Sheaths of the stem persistent; inner perianth-segments of the male and
 female flowers not or scarcely exceeding the outer in length
 1. *Restio* Linn.
 Sheaths of the stem deciduous or, if persistent, then the inner perianth-
 segments of the male and female flowers distinctly exceeding the
 outer 2. *Chondropetalum* Rottb.
4. Styles 2... .. 5
 Style solitary or styles 3 11
5. Female flowers hidden by imbricate bracts, in compact spikes; female
 spikelets with 1 or more sterile bracts beneath the lowermost fertile
 bract 6
 Female flowers neither hidden by imbricate bracts nor in compact
 spikelets; female spikelets without a sterile bract beneath the lower-
 most fertile bract 10
6. Female spikelets 6- or more-flowered; female flowers much compressed
 6. *Staberoha* Kunth
 Female spikelets 1-, 2-, or several-flowered (not more than 5); female
 flowers obtusely trigonous, terete or slightly compressed 7
7. Female spikelets with 2—5 perfect flowers, rarely by abortion with 1
 perfect flower in one species; fruit compressed, semi-terete or terete,
 flattened or with a longitudinal depression on its adaxial side
 9. *Cannomois* Beauv.
 Female spikelet with 1 perfect flower, rarely with 2 perfect flowers (in 1
 species), but then the ovary tubercled on its upper parts; fruit terete 8
8. Male flowers produced in compact or rarely lax spikelets 9
 Male flowers produced in racemes and panicles
 10. *Willdenowia* Thunb.
9. Stems simple 8. *Hypodiscus* Nees
 Stems repeatedly branched 7. *Hypolaena* R. Br.

10. Male and female inflorescences with a solitary spathe; spikelets solitary, terminal on the stems or on short lateral branchlets; perianth-segments equal in length **11. Anthochortus** Nees
 Male and female inflorescences with more than 1 spathe; spikelets neither solitary nor terminal on the stems; perianth-segments unequal in length **3. Elegia** Linn.
11. Style solitary **5. Thamnochortus** Berg.
 Styles 3... .. **12**
12. Female spikelet without a sterile bract beneath the lowermost fertile bract **3. Elegia** Linn.
 Female spikelets with 1 or more sterile bracts beneath the lowermost fertile bract **13**
13. Flowering stems branched; male spikelets erect, mostly ovate or oblong **4. Leptocarpus** R. Br.
 Flowering stems unbranched; male spikelets usually nodding, mostly turbinate or semi-orbicular **6. Staberoha** Kunth

804 1. RESTIO Linn., Syst. Nat., ed. 12, vol. 2, p. 735 (1767)

Plants dioecious, rarely monoecious. *Male spikelets* usually many, in panicle or spicate cymes, occasionally solitary and terminal, ovate, obovate, oblong, elliptic, or rotundate in outline, terete or occasionally somewhat compressed, usually many-flowered, rarely few-flowered, each with a spathe or sheath at its base; bracts usually many and imbricate, most or only a few fertile. *Perianth* of 6 or of 4 segments in 2 series, usually compressed, sometimes 3-sided; segments generally unequal, rigid or membranous; the outer-lateral conduplicate, boat-shaped, often villous and keeled; the anterior segment flattened or rounded; inner segments usually smaller, thinner, and flattened. *Anthers* oblong, apiculate or mucous. *Rudimentary ovary* with 2 or 3 minute styles or absent. *Female spikelets* many, in panicle or spicate cymes or solitary and terminal, like or unlike the male, many-, few-, or 1-flowered. *Perianth* as in the male but usually larger; inner segments often becoming tough with the development of the fruit. *Staminodes* generally 3 or absent. *Ovary* ovate, obovate, oblong, or rotundate in outline, compressed or 3-sided, 2-, 3- (or by abortion 1-) chambered; styles 2 or 3, adjacent or remote, free or united in their lower parts. *Fruit* capsular, compressed, 3-sided or 3-lobed, 2-, 3- (or by abortion 1-) seeded. *Seed* tubercled or tessellate.

Flowering stems tufted or arising from a creeping rootstock, clothed at the base with clasping sheaths, erect or rarely reclining, terete, compressed or 4-sided, branched or simple; leaf-sheaths persistent, usually closely embracing the stem and more or less mucronate or aristate, rarely prolonged into a foliaceous mucro; sterile stems often present, shorter and more slender and more branched than the fertile.

Species about 120, natives of South Africa and Australia; 89 species have been described from South Africa, which are mostly confined to the south-western districts of the Cape Province.

805 2. CHONDROPETALUM Rottb., Program., 12 (1772)

(*Dovea* Kunth; *Askidosperma* Steud.)

Plants dioecious. *Male spikelets* many, in panicle cymes, oblong, ovate, or orbicular in outline, few- or many-flowered, usually somewhat compressed, with few or no sterile bracts. *Perianth* more or less trigonous or compressed, often somewhat arcuate, usually much longer than the subtending bract;

segments 6, in 2 series; the outer lateral boat-shaped, mostly keeled, glabrous or villous on the keel; the inner oblong or lanceolate, dorsally rounded, distinctly longer than the outer. *Anthems* ovate-oblong, with a prominent apiculus. *Rudimentary ovary* with 2 or 3 minute styles. *Female spikelets* resembling the male, generally in a shorter and more crowded inflorescence and with fewer flowers. *Perianth* trigonous or occasionally compressed; segments 6, resembling those in the male; the inner usually much longer than the outer, often equal (in one species the outer exceed the inner). *Staminodes* strap-shaped. *Ovary* trigonous, 3-lobed or compressed, 3- (or by abortion 2-) chambered; styles 2 or 3, free. *Fruit* capsular, trigonous, 3-lobed or compressed, 3-, 2- (or by abortion 1-) seeded. *Seed* smooth or ribbed.

Flowering stems tufted or on a creeping rootstock, erect, simple or branched, terete, clothed at the base with crowded dark-coloured sheaths; upper sheaths deciduous or persistent; adult sterile stems seldom present; female inflorescence often with persistent or subsistent conspicuous spathes.

Endemic; species 16, extending from the Clanwilliam to the Albany districts.

807 3. ELEGIA Linn., Mant., vol. 2, p. 162 (1767)

(*Lamprocaulos* Mast.)

Plants dioecious. *Male spikelets* many or few, in paniced cymes, oblong, ovate, or orbicular in outline, few- or many-flowered, with few or no sterile bracts. *Perianth* trigonous or subterete, often arcuate; segments 6; the inner longer than the outer. *Anthems* ovate-oblong, shortly apiculate. *Rudimentary ovary* with 2 or 3 minute styles or absent. *Female spikelets* many, in paniced cymes or few in spicate cymes hidden by the spathes, few- or 1-flowered, usually without sterile bracts. *Perianth* ovate or oblong, trigonous or subterete; segments equal or unequal; the outer lateral often keeled. *Staminodes* minute or absent. *Ovary* trigonous, subterete, or compressed, 1-chambered; styles 2 or 3, distinct or rarely united in the lower half. *Fruit* 2- or 3-angled, occasionally keeled on the angles, indehiscent.

Flowering stems tufted or arising from creeping rhizomes, erect, simple or branched, terete, sometimes hollow, with deciduous or persistent leaf-sheaths; much-branched sterile stems occur in some species.

Endemic; species 25, extending from the Clanwilliam to the Stutterheim district.

808 4. LEPTOCARPUS R. Br., Prodr. Fl. Nov. Holl., p. 250 (1810)

Plants dioecious. *Male spikelets* many, in paniced cymes, few in spicate cymes or solitary and terminal, ovate, obovate, oblong, lanceolate, or cuneate in outline, many-flowered. *Perianth* compressed; segments 6; the outer lateral usually boat-shaped, more or less villous on the midrib or glabrous. *Rudimentary ovary* with 3 minute styles or absent. *Female spikelets* resembling the male, many-, several- (or by abortion 1-) flowered. *Perianth* as in the male or subtrigonous. *Staminodes* minute or absent. *Ovary* usually trigonous, rarely compressed, 1-chambered; styles 3, free or united in their lower parts, rarely united to above the middle. *Fruit* trigonous, ovoid, or elliptic in outline, indehiscent.

Flowering stems tufted or arising sporadically from creeping rhizomes, erect, branched from below the middle upwards, rarely simple, terete; leaf-sheaths closely convolute or occasionally loose in their upper parts, persistent; much-branched shorter sterile stems often present.

Species about 30, several of which occur in tropical and south-west Australia; isolated species occur in Tasmania, New Zealand, Chili, and Cochin China; 16 species described from South Africa extending from Little Namaqualand to Natal.

813 **5. THAMNOCHORTUS** Berg., Fl. Cap., p. 353, tab. 5, fig. 8 (1767)

Plants dioecious. *Male spikelets* many, in paniced cymes, often declinate, usually oblong in outline, many-flowered. *Perianth* compressed; segments 6; the outer-lateral boat-shaped, keeled along the midrib, generally longer than the inner. *Anthers* oblong, tapered above the middle into an apiculus. *Rudimentary ovary* 1-styled or absent. *Female spikelets* many, in paniced cymes, few in spicate cymes or solitary and terminal, erect, larger than the male, many-flowered, with few sterile bracts. *Perianth* subtrigonus or compressed; segments 6; the outer-lateral boat-shaped, keeled or winged along the midrib. *Staminodes* tongue-shaped and short or absent. *Ovary* compressed or subtrigonus, 1-chambered; style solitary, simple. *Fruit* subtrigonus or compressed, indehiscent.

Flowering stems tufted or on creeping rhizomes, erect, simple or with fertile or sterile branches, terete; leaf-sheaths closely convolute or loose in parts, persistent; much-branched shorter and more slender sterile stems often present.

Endemic; species 23, mostly in the south-western districts of the Cape Province, but extending on the north to Clanwilliam and eastwards to the Uitenhage district. (Type: *T. fruticosus* Berg.)

814 **6. STABEROHA** Kunth, Enum., vol. 3, p. 442 (1841)

Plants dioecious. *Male spikelet* several or many in paniced cymes, occasionally solitary and terminal, often spreading or nodding, obovate, oblong, or suborbicular in outline, or turbinate, terete, compact, many-flowered. *Perianth* compressed; segments 6, equal or subequal; the outer-lateral boat-shaped, keeled. *Anthers* oblong, apiculate. *Rudimentary ovary* minute. *Female spikelets* erect, solitary and terminal, or in pairs or several in spicate cymes or occasionally in panicles, lanceolate or oblong in outline, many-flowered. *Perianth* compressed; segments 6; the outer lateral boat-shaped, keeled or amply winged along the midrib. *Staminodes* minute. *Ovary* compressed, 1-chambered; styles 2 or 3, free, or 2 and united at the base. *Fruit* compressed, indehiscent.

Flowering stems tufted or on creeping rhizomes, erect, simple, terete; leaf-sheaths closely convolute, persistent; much-branched shorter sterile stems often present.

Endemic; species 5, extending from Clanwilliam to Mossel Bay. (Type: *S. distachya* Kunth)

815 **7. HYPOLAENA** R. Br., Prodr. Fl. Nov. Holl., p. 251 (1810)

Plants dioecious. *Male spikelets* few or many, in spicate or paniced cymes, 1 to many-flowered. *Perianth* compressed, subterete or trigonous; segments 6, sometimes imperfectly developed or absent. *Anthers* oblong, spiculate. *Rudimentary ovary* minute. *Female spikelets* solitary or several in a spicate cyme, terete, with several sterile bracts, with one perfect flower. *Perianth* stipitate or in one species sessile, terete; segments 6; the inner sometimes imperfectly developed or only the 3 outer present. *Staminodes* minute or absent. *Ovary* oblong in outline, terete or slightly compressed, often with a hard cap, 1-chambered; styles 2, free or united in their lower parts. *Fruit* oblong or elliptic in outline, terete, indehiscent.

Flowering stems tufted or less often arising from creeping rhizomes, erect or occasionally reclining, branched, terete or compressed; leaf-sheaths persistent, rarely prolonged into a foliaceous mucro.

Species about 18, found in South Africa, Australia, and New Zealand; 10 species native in the Cape Province, extending from the south-western districts to the Willowmore district; 1 species recorded from British Central Africa.

816 8. HYPODISCUS Nees in Lindl. Nat. Syst. Bot., ed. 2, p. 450 (1836)

Plants dioecious. *Male spikelets* few or many, in spicate or paniced cymes, occasionally terminal and solitary, compact or lax, each subtended by a rather conspicuous deciduous spathe, often with awned bracts, many-flowered. *Perianth* usually much compressed; segments 6 or the inner series absent; the outer lateral mostly boat-shaped and conduplicate. *Anthers* oblong, apiculate. *Rudimentary ovary* with 2 styles. *Female spikelets* few or sometimes many, in spicate or paniced cymes, rarely solitary, compact, each subtended by rather conspicuous, usually persistent, spathe, 1-flowered, with many sterile bracts below the flower. *Perianth* sessile or stipitate, terete; segments 6 or fewer or absent. *Staminodes* minute. *Ovary* usually stipitate, oblong in outline, terete, often topped by a toothed or lobed disc, 1-chambered; styles 2, deciduous, free or united below. *Fruit* stipitate or sessile, barrel-shaped or rotundate, smooth, tessellate, or tuberculed on the sides or at the apex, indehiscent.

Flowering stems tufted or closely set along creeping rhizomes, erect, terete or compressed, simple; leaf-sheaths persistent, often on the upper parts of the stem, closely convolute; sterile stems usually few or absent.

Endemic; species 8, chiefly in the south-western district of the Cape Province, but extending from Little Namaqualand to the Uitenhage district. (Type: *H. aristatus* Nees)

817 9. CANNOMOIS Beauv. ex Desv. in Ann. Nat. Sc., vol. 13, p. 43, tab. 3, fig. 1 (1828)

Plants dioecious. *Male spikelets* many, in paniced cymes, oblong, ovate, or orbicular in outline, compact, many-flowered. *Perianth* compressed; segments 6; the outer-lateral boat-shaped. *Anthers* oblong or elliptic, apiculate or mucous. *Rudimentary ovary* minute or absent. *Female spikelets* terminal and solitary or 2-nate or few or many in spicate cymes, at first usually oblong in outline, becoming ovate, acuminate, terete, 1—5-flowered, with few sterile bracts, rarely perfecting more than two fruits, each subtended by a persistent spathe. *Perianth* obscure during the flowering period, clasping the ovary; segments 6, usually enlarging with the development of the fruit to which they are closely adpressed, dorsally rounded or flattened. *Staminodes* minute or absent. *Ovary* oblong in outline, somewhat compressed, 1-chambered, often with a hard cap; styles 2, deciduous, free, attenuate. *Fruit* more or less stipitate, oblong, ovate-oblong, or ovate in outline, obtuse at the apex, terete or subterete or compressed, flattened or with a longitudinal depression on the adaxial side, smooth or rugulose, glabrous or setaceo-pubescent, woody, indehiscent.

Flowering stems closely set along creeping rhizomes, less often tufted, erect, terete, branched or simple; leaf-sheaths persistent, closely convolute; male inflorescence usually with several conspicuous deciduous spathes; sterile stems few or absent.

Endemic; species 7, extending from the Van Rhynsdorp to the Albany districts. (Type: *C. cephalotes* Beauv. = *C. virgata* (Rottb.) Steud.)

818 10. WILLDENOWIA Thunb., Vet. Akad. Handl. Stockh., vol. 11, p. 26, tab. 2, figs. 1.2 (1790)
(*Ceratocaryum* Nees)

Plants dioecious. *Male flowers* many, in paniced racemes, each subtended by a deciduous linear or setaceous bract; perianth-segments 6, linear or setaceous, papery or membranous; the outer distinctly longer than the

inner. *Anthers* oblong, apiculate. *Rudimentary ovary* minute. *Female spikelets* 1 to several, in spicate cymes, each subtended by a conspicuous persistent spathe, oblong in outline, 1- or rarely 2-flowered, with several imbricate sterile bracts below the flower. *Perianth* sessile or on a short fleshy stalk, terete, clasping the ovary; segments 6 or fewer or absent, usually unequal. *Staminodes* tongue-shaped, minute. *Ovary* sessile or stipitate, oblong in outline or globose, usually capped by a hard cap, 1-chambered; styles 2, free or rarely shortly united. *Fruit* barrel-shaped, ovate in outline or globose, terete, usually pitted, sometimes tubercled, bony, indehiscent.

Flowering stem arising from creeping rhizomes or tufted, erect, branched or simple, terete; leaf-sheaths persistent, closely convolute; male inflorescence with conspicuous deciduous spathes; sterile stems few or absent.

Endemic; species 12, chiefly confined to the south-western districts of the Cape Province.

818a **11. ANTHOCHORTUS** Nees, in Lindl. Nat. Syst. Bot., ed. 2, p. 451 (1836)

Plants dioecious. *Male spikelets* solitary and terminal or on lateral branchlets, linear in outline, laxly 2—4-flowered, with deciduous bracts. *Perianth* subterete; segments 6, membranous, equal; the outer-lateral boat-shaped. *Anthers* linear, apiculate. *Rudimentary ovary* absent. *Female spikelets* solitary and terminal or on lateral branchlets, containing 1 lower fertile bract with a perfect flower and 1 upper bract with a rudimentary flower. *Perianth* oblong, terete; segments 6, membranous, equal. *Staminodes* tongue-shaped. *Ovary* obovate in outline, 1-chambered; styles 2, united at the base, diverging upwards. *Fruit* oblong in outline, indehiscent.

Flowering stem tufted, erect, sparingly branched, slender, terete or subquadrate, sulcate-striate; leaf-sheaths persistent, loosely convolute.

Endemic; species 1, recorded from the Paarl, Swellendam, and Riversdale districts. (Type: *A. ecklonii* Nees)

818b **12. PHYLLOCOMOS** Mast., in Engl. Bot. Jahrb., vol. 29, Beibl. 66, p. 19 (1900)

Plants monoecious or flowers bisexual. *Flowers* hidden by the bracts. *Perianth* oblong, terete; segments 6, dorsally rounded or the outer lateral somewhat angled, glabrous, subequal. *Anthers* linear, falling as the fruit develops. *Ovary* narrowly ovate in outline, 1-chambered; styles 2, free. *Fruit* smooth or slightly rough at the apex, indehiscent.

Flowering stem arising from creeping rhizomes, erect, slender, terete, obscurely sulcate, scabrid, sparingly branched; leaf-sheaths persistent, closely convolute, aristate, with broad hyaline membranous margins; inflorescence containing a terminal, occasionally also a lateral, tuft of pedunculate 1-flowered spikelets; bracts many, erect-spreading, aristate, membranous, pale.

Endemic; species 1, recorded from Mitchell's Pass in the Ceres district. (Type: *P. insignis* Mast.)

NOTE.—Masters in his original description states that the flowers are unisexual; Mr. N. S. Pillans states that all the flowers he dissected were bisexual; a single flower from the type number 1 dissected was found to be unisexual. It is evident that the flowers may be either bisexual or unisexual. At present the genus is only known from a single collecting (Schlechter 9956).—E. P. P.

19. MAYACACEAE

Flowers bisexual, regular. *Perianth-segments* in 2 rows of 3 each; the 3 outer calyx-like, subvalvate; the 3 inner petal-like, subequal, spreading,

obovate or suborbicular, shortly clawed, broadly imbricate. *Stamens* 3, hypogynous, opposite the outer segments; filaments free; anthers 4-theous, opening by a small pore or pore-like slit at the top. *Ovary* superior, 1-chambered; placentas 3, parietal; ovules many, in 2 rows on each placenta; style solitary. *Capsule* surrounded by the long persistent outer perianth-segments and stamens, ovoid, with a membranous pericarp, opening by 3 valves each bearing a placenta in the middle. *Seed* scrobiculate-reticulate, capped by a small stopper; endosperm present.

Slender aquatic or marsh herbs; leaves shortly linear-filiform, bidentate at the apex; flowers pedicelled, solitary and axillary or several crowded at the apex of the branches.

Genus 1; species 8, natives of North and South America; 1 species recorded from South West Africa.

825 MAYACA Aubl., Pl. Gen. Franc., vol. 1, p. 42, t. 15 (1775)

Characters and distribution of the family. (Type: *M. fluvialis* Aubl.)

20. XYRIDACEAE

Flowers bisexual. *Sepals* 3 or rarely 2; the 2 lateral exterior, boat-shaped, glumaceous; the third interior membranous, forming a hood over the corolla. *Corolla* regular, 3-lobed; tube short or long. *Stamens* 3, attached to the mouth of the corolla-tube and opposite the lobes; staminodes 3 or 0, when present, then simple or bifid with glabrous or hairy arms or more or less deeply divided into brush-like tufts of hairs; anthers 2-theous, opening lengthwise by slits. *Ovary* superior, 1-chambered, with 3 parietal placentas or imperfectly 3-chambered at the base with the placentas then arising from the base of the ovary; ovules numerous to few, in 2 or more series; style simple or 3-lobed, sometimes with tubercles or processes at or below the middle. *Capsule* enclosed in the persistent corolla-tube, opening by 3 valves. *Seed* numerous; endosperm copious.

Perennial or rarely annual herbs of tufted habit, growing in damp places; leaves radical, linear, terete, or filiform, sheathing at the base; peduncles erect, simple, terminated by a solitary dense head or spike, leafless or bearing one or more pairs of convolute sheathes; flower-heads or spikes globose, ovoid, or elongate; bracts glumaceous, with a solitary flower in the axil of each.

Genera 2; species about 174, dispersed throughout the tropics and warmer regions of the earth.

826 XYRIS Linn., Sp. Pl., ed. 1, p. 42 (1753)

Sepals 3; the 2 lateral exterior, boat-shaped, keeled; 1 interior membranous, convolute or obtusely calyptriform, closely enveloping the corolla when in bud, circumscissile at the base, deciduous as the corolla develops. *Corolla* with a slender tube and 3 spreading cuneate-obovate lobes. *Staminodes* 3, simple, bifid or 2-armed, glabrous or penicellate. *Style* without tubercles or processes, 3-branched; stigmas dilated or subcapitate.

Peduncles with a basal sheath, naked above, otherwise characters as in the family.

Species about 224, found in the tropical and warmer regions of the earth; 8 species recorded from South Africa, extending from the Transvaal and Natal, through the coastal districts into Namaqualand and South West Africa. (Type: *X. indica* Linn.)

21. ERIOCAULACEAE

Flowers very small, regular or irregular, unisexual. *Calyx* of 2—3 free or variously connate scarious or submembranous sepals, often ciliate and more or less hairy on the back near the apex, very rarely wanting. *Corolla* usually separated from the calyx by a distinct stipe; petals 2—3, free or variously connate, equal or unequal, sometimes rudimentary or absent, membranous and hyaline or moderately thick and opaque, with or without a gland on the inner face, often ciliate or hairy. *Stamens* equal in number to the petals and inserted on them or 4 or 6 (or by abortion fewer) in 2 series. *Staminodes* sometimes present in the female flowers and then minute. *Ovary* in male flowers rudimentary, reduced to 2—3 minute glands. *Ovary* in female flowers superior, 2—3-chambered, with a solitary pendulous ovule in each chamber; style divided, with 3 simple or bifid filiform branches, with or without 3 other branches or appendages alternating with them or arising from the style below them. *Fruit* a 2—3-locular capsule. *Seed* solitary, pendulous; endosperm firm.

Perennial or annual herbs, growing in water, swamps, bogs, or on dry ground, stemless or with simple or branched leafy stems; leaves linear or subulate, alternate, arranged in a dense or lax rosette or scattered along the stem; inflorescence a head; heads usually bearing both male and female flowers, rarely bearing flowers of one sex only.

Genera 9; species about 535, found in all warm climates; most numerous in tropical America, very few in the temperate regions.

1. Stamens double the number of the petals, in two alternating series; apex of petals glandular 2
 Stamens equalling the number of the petals, in one series; apex of petals without glands 3. *Syngonanthus* Ruhl.
2. Petals free, sometimes rudimentary or rarely absent
 1. *Eriocaulon* Linn.
 Petals connate into a cylindric tube, but with free claws in the female flowers 2. *Mesanthemum* Koern.

828

1. ERIOCAULON Linn., Sp. Pl., ed. 1, p. 87 (1753)

Male flowers:—*Sepals* 2—3, variously connate, bearded, ciliate or glabrous at the apex. *Petals* 2—3, free, sometimes rudimentary or absent, usually with a gland and often hairy on their inner face, often ciliate or bearded at the apex. *Stamens* in 2 series, double the number of petals or by abortion fewer. *Female flowers*:—*Sepals* 2—3, free, otherwise as in the male. *Petals* as in the male, rarely rudimentary or absent. *Staminodes* 0. *Ovary* 2—3-chambered; style-branches 3, simple, without alternating appendages.

Marsh or aquatic herbs, usually stemless, often caespitose with the leaves all radical or in a few species with a simple or branched leafy stem; scapes 1-headed, longer than the leaves.

Species about 335, the majority found in South America, Africa, Asia, and Australia; 10 species in South Africa, mostly eastern into Natal; also recorded from the Transvaal and the Somerset East district. (Type: *E. decangulare* Linn.)

829

2. MESANTHEMUM Koern., Linnaea, vol. 27, p. 572 (1856)

Male flowers:—*Sepals* 3, free or shortly connate at the base, hyaline. *Petals* united into an entire cylindric tube which is subtruncate or 3-lobed at the apex and with 3 glands on the inside near the top. *Stamens* 6, in 2 alternating series, included within the corolla-tube. *Female flowers*:—*Sepals* 3,

free. *Petals* as in the male, but the perianth-tube divided at the base into 3 short claws. *Ovary* 3-chambered; style 3-branched; branches simple and filiform or more or less enlarged and ramified near their apex, without alternating appendages.

Marsh herbs, stemless or with a more or less elongating and rooting stem; leaves broadly linear, in a dense tuft; scape 1-headed, longer than the leaves; heads bearing flowers of both sexes.

Species 9, natives of tropical Africa and Madagascar; 1 species south of the tropic in West Africa. (Type: *M. pubescens* Koern.)

832a 3. SYNGONANTHUS Ruhl., Urb. Symb. antill., vol. 1, p. 487 (1900)

Male flowers.—*Sepals* 3, more or less free. *Petals* connate into a 3-lobed glabrous tube, at length almost always involute, rarely in 3 parts. *Anthers* 2-theous. *Female flowers*.—*Sepals* as in the male. *Petals* connate at or above the middle, free at the base and apex. *Style* terete, with the appendages epapillose; stigmas simple, inserted on the style at the same height as the appendages.

Herbs; stems short or elongated, sterile or fertile, simple or branched; basal fibres thickish, spongy, white.

Species about 150, mostly South American; a few species in Africa; 1 species recorded from the Waterberg, Pretoria, and Barberton districts of the Transvaal.

22. COMMELINACEAE

Flowers bisexual or the upper part of the cyme with male flowers, usually regular, rarely zygomorphic. *Sepals* 3, usually free, rarely united, imbricate. *Petals* 3, blue, yellow, or white, usually free, rarely united into a slender tube, imbricate. *Stamens* 6 or fewer by abortion, either all fertile or 1 or more barren; filaments free or very rarely some united, glabrous or bearded with beaded hairs; anthers basifixed, 2-theous, opening by longitudinal slits or rarely by an apical pore. *Ovary* superior, sessile or shortly stipitate, 3- (rarely 2-) chambered, with 1 to several ovules in each chamber; style terminal, simple; stigma terminal, often small, capitate or rarely 3-fid. *Fruit* a loculicidal capsule. *Seed* often reticulate or rugose; embryo small; endosperm floury.

Perennial herbs, erect or prostrate; leaves alternate, with sheathing bases; flowers in axillary clusters or mostly in terminal cymes or panicles.

Genera 34; species about 550, found in all warm countries.

- | | | | | | |
|--|-------------------------------|-----|-----|-----|---|
| 1. Flowers zygomorphic; filaments not bearded | ... | ... | ... | ... | 2 |
| Flowers regular; filaments bearded | ... | ... | ... | ... | 4 |
| 2. Flowers 1—2, included within a folded or funnel-shaped spathe | | | | | |
| | 1. <i>Commelina</i> Linn. | | | | |
| Flowers panicled or clustered, not surrounded by a spathe | ... | ... | ... | ... | 3 |
| 3. Fertile stamens 6 or 5 ... 5. <i>Floscopa</i> Lour. | | | | | |
| Fertile stamens 3 or 2 ... 2. <i>Aneilema</i> R. Br. | | | | | |
| 4. Flowers axillary, piercing the base of the leaf-sheath | | | | | |
| | 3. <i>Coleotype</i> C. B. Cl. | | | | |
| Flowers in dense axillary and terminal clusters | | | | | |
| | 4. <i>Cyanotis</i> Don. | | | | |

896 1. COMMELINA Linn., Sp. Pl., ed. 1, p. 40 (1753)

Petals clawed; 2 equal; the third exterior and smaller than the other 2. *Stamens* 6; 3 perfect and of which 1 usually has a larger anther than the other 2; 3 sterile; filaments not bearded. *Ovary* 3-chambered; the 2 anterior chambers with 1—2 ovules; the dorsal chamber with 1 ovule or empty or suppressed. *Fruit* a loculicidal capsule. *Seed* ellipsoid or angled, reticulated or pitted or rugose.

Annual succulents; spathe an ovate leaf-like bract, simply folded, boat-like or the lower margins connate to form an oblique funnel; inflorescence of 1—2 cymes included (or nearly so) within the spathe; the upper flowers of the cyme usually male; flowers zygomorphic.

Species about 227 found in all warm countries; 10 species in South Africa extending from Natal and the Transvaal to the Cape; also recorded from the Somerset East district to Bechuanaland. (Type: *C. communis* Linn.)

899 2. ANEILEMA R. Br. part., Prodr., p. 270 (1810)

Petals 3, clawed, subequal. *Stamens* 6; fertile stamens 2 or 3; the remainder sterile; filaments not bearded. *Ovary* 2—3-chambered, with 1—5 ovules in each chamber. *Fruit* a loculicidal capsule, 1—5-seeded. *Seed* rugose or pitted.

Weak herbs, with ascending or erect stems; inflorescence a terminal panicle within a small concave bract or flowers 2 together within the terminal bract.

Species between 70 and 80, distributed in tropical and warm temperate zones; 4 species in South Africa extending from Natal and the northern Transvaal to Pondoland.

903 3. COLEOTRYPE C. B. Cl., in DC. Monogr. Phan., vol. 3, p. 238, t. 8 (1881)

Corolla 3-lobed; tube linear, as long as the blue segments. *Stamens* 6, inserted towards the top of the corolla-tube, subequal, all fertile; filaments bearded. *Ovary* 3-chambered, with 1—2 ovules in each chamber. *Fruit* a 3-angled capsule, hairy at the top. *Seed* 1 (rarely 2) in each locus.

Branching herbs, creeping at the base; leaves with a cylindric sheath; flowers massed, axillary, piercing the base of the leaf-sheath.

Species 4—5, natives of Madagascar; 1 species found in Natal. (Type: *C. natalensis* C. B. Cl.)

904 4. CYANOTIS D. Don, Prodr. Fl. Nep., p. 45 (1825)

Petals 3, free at the insertion, then connate (more or less completely) into a cylindric tube, terminated by 3 round segments. *Stamens* 6, subequal, free or nearly free from the corolla, all fertile; filaments bearded with beaded hairs. *Ovary* 3-chambered, with 2 ovules in each chamber. *Fruit* a 3-valved capsule. *Seeds* 2 in each locus.

Herbs, often weak, creeping or ascending, branching; leaves various; flowers in dense axillary and terminal clusters.

Species between 45 and 50, found in the warm regions of the Old World from Africa to south China and north Australia; 2 species recorded from South Africa, one of which is found in the Barberton district (Kaapsche Hoop) and the other extending from the Transvaal and Natal, through the coastal belt to the Riversdale district; also recorded from the Queenstown district. (Type: *C. barbata* D. Don)

908 5. FLOSCOPA Lour., Fl. Cochinch., p. 192 (1790)

Petals 3, free, obovate, sessile or scarcely clawed. *Stamens* 5—6, free, subequal or the 2—3 upper stamens rather smaller; all fertile; filaments without

beaded hairs. *Ovary* 2-chambered, with a single ovule in each chamber. *Fruit* a small membranous 2-valved capsule.

Stems simple or branched; leaves rarely large; inflorescence a dense terminal panicle.

Species 17 or 18, distributed in the warm regions of the world; 7 species found in Africa, of which 1 occurs in South Africa and is recorded from the Transvaal and Natal. (Type: *F. scandens* Lour.)

23. PONTEDERIACEAE

Flowers bisexual, usually regular. *Perianth* petaloid, of 6 segments in 2 rows, united into a tube in the lower part, rarely free. *Stamens* 3 (in the South African species) or 6 or rarely 1, usually of 2 sizes and often of different colours; filaments free; anthers 2-thecous, opening lengthwise by slits or rarely by pores. *Ovary* 3-chambered with axile placentas or 1-chambered with 3 parietal placentas; ovules numerous to solitary in each chamber; style entire or shortly 3-lobed. *Fruit* a many-seeded capsule or rarely a 1-seeded achene. *Seeds* small, ribbed; embryo cylindric, straight, embedded in a copious endosperm.

Aquatic erect or floating herbs; leaves alternate, with floating or immersed blades, usually sheathing at the base; inflorescence a raceme or panicle subtended by a spathe-like leaf-sheath; bracts minute or absent.

Genera 6; species about 25, chiefly natives of tropical Africa and tropical America; 1 species found in Australia.

924 1. HETERANTHERA Ruiz. et Pavon, Fl. Peruv. et Chil. Prodr., vol. 2, p. 9 (1799)

Perianth with a distinct tube; segments equal, spreading, oblong. *Stamens* 3, attached to the throat of the perianth-tube, exserted, more or less unequal. *Ovary* 1-chambered, with 3 parietal placentas or imperfectly 3-chambered with very prominent placentas, with numerous ovules in each chamber; style filiform; stigma thickened. *Capsule* oblong or linear. *Seeds* numerous, ovoid, ribbed.

Lower part of the stem creeping and rooting in the mud; leaves with long petioles sheathing at the base; flowering shoots bearing one leaf whose sheath embraces the membranous spathe which subtends the terminal flower-spike or includes 1—3 flowers; inflorescence spicate, with the flowers all alike or one or more cleistogamous.

Species about 9, natives of Africa and America; 1 species found in the Transvaal Bushveld. (Type: *H. reniformis* Ruiz. et Pav.)

24. JUNCACEAE

Plants sometimes dioecious. *Flowers* regular, bisexual in the South African genera. *Perianth* of 6 subequal glumaceous segments in 2 rows or rarely of only 3 segments. *Stamens* 6 or 3, free, opposite the perianth-segments; anthers 2-thecous, basifixed, with introrse dehiscence; pollen in tetrads. *Ovary* superior, 1-chambered or divided by 3 septa or 3-chambered; ovules numerous to 3, ascending from the base of the ovary or in 2 series on parietal placentas. *Fruit* a 1—3-locular capsule, loculicidally dehiscent. *Seed* ovoid, globose, or angled by pressure, rarely compressed, sometimes tailed; embryo small; endosperm copious.

Perennial or annual herbs, rarely woody (*Prionium*); stems often leafy only at the base; leaves terete or linear; flowers solitary or more usually in panicles, corymbs, or heads, often very small; bracts scarious, persistent.

Genera 8; species about 315 with a world-wide distribution, more numerous in temperate and cold or montane regions; usually in wet or damp habitats.

1. Ovary 1-chambered; leaves radical, ciliate with long soft hairs

3. *Luzula* DC.

Ovary completely or incompletely 3-chambered; leaves radical or in a terminal rosette, glabrous or serrated 2

2. Leaves reduced to sheaths or, if developed, not serrated; style divided to the middle into 3 linear or filiform spreading stigmas

2. *Juncus* Linn.

Leaves in a dense terminal rosette; stigmas 3, sessile

1. *Prionium* E. Mey.

930 1. *PRIONIUM* E. Mey., in *Linnaea*, vol. 7, p. 131 (1832)

Perianth rigid; segments ovate. *Stamens* 6, as long as the perianth-segments. *Ovary* sessile, globose, 3-chambered, with usually 2 axile ovules in each chamber; stigmas 3, sessile, spreading. *Capsule* loculicidally 3-valved. *Seed* usually 1 in each loculus, ovoid-oblong; endosperm fleshy.

Stem thick; leaves arranged in a dense rosette at the top of the stem; inflorescence a large dense terminal panicle on a long peduncle.

Endemic; species 1, extending from the Clanwilliam district, through the coastal districts to Natal. (Type: *P. palmita* E. Mey.)

936 2. *JUNCUS* Linn., *Sp. Pl.*, ed. 1, p. 325 (1753)

Perianth rigid; segments 6, free. *Stamens* 6, less often 3, hypogynous. *Ovary* sessile, more or less completely 3-chambered due to protruding parietal placentas; style filiform, divided to the middle into 3 linear or filiform spreading stigmas. *Capsule* loculicidally 3-valved. *Seeds* numerous, very small, often tailed.

Perennial or annual herbs; leaves various, terete or flat, sometimes reduced to membranous sheaths, glabrous; inflorescence terminal or apparently lateral, laxly paniced or congested into a head; perianth usually brown.

Species about 250, cosmopolitan; 39 species found in South Africa, extending from Namaqualand to Natal and the Transvaal; also widely spread in the central districts; 27 of the species recorded from South Africa are endemic. (Type: *J. acutus* Linn.)

937 3. *LUZULA* DC., in *Lam. et DC. Fl. Franc.*, vol. 1, p. 198 (1805)
et vol. 3, p. 158 (1805)

Perianth rigid; segments ovate. *Stamens* 6, shorter than the perianth. *Ovary* sessile, 1-chambered, with 3 ovules arising from a short basal placenta; style filiform, trifurcate. *Capsule* 3-valved. *Seeds* 3 or fewer, erect, subglobose or angled by pressure on the inner face, minutely striated.

Densely tufted perennial herbs; leaves grass-like, mostly radical, ciliate with soft hairs; inflorescence laxly or densely paniced, terminal; perianth brown, yellow, or white.

Species about 90, cosmopolitan; 1 species in South Africa recorded from Natal, the Mont-Aux-Sources, Katberg, and Cathcart districts. (Type: *L. campestris* (L.) DC.)

25. LILIACEAE

Flowers bisexual, rarely unisexual, regular or nearly so. *Perianth* usually corolline, of free segments or tubular; segments or lobes 6, rarely 4 or more, mostly in 2 series, imbricate or the outer valvate. *Stamens* usually 6, rarely more or less, hypogynous or adnate to and always opposite the perianth-segments; filaments free or more or less united; anthers 2-theous, with introrse or extrorse dehiscence, rarely opening by a terminal pore. *Ovary* superior, very rarely more or less adnate to the base of the perianth-tube and then semi-inferior, mostly 3-chambered with axile placentas or rarely 1-chambered with parietal placentas; ovules usually numerous in each chamber, rarely solitary; style entire or divided, rarely styles free; stigmas mostly small. *Fruit* a capsule or berry. *Seed* globose, discoid, or angled by pressure, sometimes winged, rarely hairy; embryo small; endosperm copious, mostly horny.

Plants usually stemless, sometimes shrubby or arborescent or climbing, usually bulbous, more rarely with a corm or tuber or a rhizome, with fleshy or fibrous roots; leaves various, sometimes appearing after the flowers, mostly radical, sometimes thick and succulent, sometimes produced at the apex into a tendril, sometimes reduced to small scales and with the stems modified to form cladodes; inflorescence a raceme, panicle, corymb, or spike, more rarely a head or umbel.

Genera 235; species about 3,500 widely distributed.

NOTE.—See J. Hutchinson, *The Families of Flowering Plants (Monocotyledons)*. Genera with an umbellate inflorescence are placed in the family *Amaryllidaceae*.—E. P. P.

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|--|-------------------------------|
| 1. Flowers in umbels, surrounded by an involucre of bracts | 2 |
| Flowers not in umbels | 4 |
| 2. Corona in the throat of the perianth-tube | 31. <i>Tulbaghia</i> Linn. |
| Perianth without a corona | 3 |
| 3. Perianth-tube 0; 3 inner filaments tricuspidate | 32. <i>Allium</i> Linn. |
| Perianth-tube present; filaments not tricuspidate | 30. <i>Agapanthus</i> L'Her. |
| 4. Leaves ending in a tendril or with a pair of tendrils at the base of the petiole | 5 |
| Leaves without tendrils | 7 |
| 5. Leaves with a pair of tendrils at the base of the petiole | 61. <i>Smilax</i> Linn. |
| Leaves ending in a tendril | 6 |
| 6. Perianth-tube 0; segments spreading or reflexed; inflorescence a few-flowered corymb | 1. <i>Gloriosa</i> Linn. |
| Perianth-tube very short; segments ascending; flowers axillary, solitary | 2. <i>Littonia</i> Hook. fil. |
| 7. Leaves reduced to scales; the apparent leaves modified stems (phyllodes) | 59. <i>Asparagus</i> Linn. |
| Leaves not reduced to scales | 8 |
| 8. Inflorescence topped by a coma of empty leafy bracts | 43. <i>Eucomis</i> L'Her. |
| Inflorescence without a terminal coma of leafy bracts | 9 |
| 9. Stems tall and voluble, with many pinnate branches | 20. <i>Bowiea</i> Harv. |
| Stems simple or branched or none, if voluble then not pinnately branched | 10 |

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|--|----------------------------------|-----|
| 10. Seeds woolly | 21. <i>Eriospermum</i> Jacq. | 11 |
| Seeds not woolly | ... | ... |
| 11. Filaments densely bearded | 13. <i>Bulbine</i> Linn. | 12 |
| Filaments not bearded | ... | ... |
| 12. Styles 3, free | ... | 13 |
| Style solitary, usually with a capitate or tricuspidate stigma, rarely the 3 stigmas very distinct | ... | 19 |
| 13. Inflorescence a head overtopped by the exterior bracts | 4. <i>Androcymbium</i> Willd. | 14 |
| Inflorescence a raceme or spike or flowers solitary... .. | ... | ... |
| 14. Perianth-segments with a pair of nectariferous spots or auricles or glandular foveoles at the base of the blade | ... | 15 |
| Perianth-segments without any appendages | ... | 18 |
| 15. Perianth-tube present... .. | 8. <i>Wurmbea</i> Thunb. | 16 |
| Perianth-tube 0 | ... | ... |
| 16. Inflorescence a spike; segments with a pair of nectariferous spots or auricles at the base of the blade | ... | 17 |
| Inflorescence a raceme or corymb; segments with 2 glandular foveoles at the base of the claw | 9. <i>Ornithoglossum</i> Salisb. | ... |
| 17. Underground stem a bulb; carpels diverging at the apex | 7. <i>Neodregea</i> C. H. Wright | ... |
| Underground stem a corm; carpels not diverging at the apex | 6. <i>Dipidax</i> Salisb. | ... |
| 18. Perianth-segments distinctly clawed; ovary and fruit several times longer than broad | 5. <i>Baeometra</i> Salisb. | ... |
| Perianth-segments scarcely clawed; ovary and fruit subglobose or obovoid | 10. <i>Iphigenia</i> Kunth | ... |
| 19. Plants with woody stems | ... | 20 |
| Stems not woody | ... | 22 |
| 20. Leaves fleshy; fruit a capsule... .. | 24. <i>Aloe</i> Linn. | 21 |
| Leaves not fleshy; fruit a berry | ... | ... |
| 21. Inflorescence a raceme or panicle; ovule solitary in each ovary-chamber | 57. <i>Dracaena</i> Linn. | ... |
| Inflorescence a simple or compound cyme in the axils of the upper leaves; ovules few in each ovary-chamber | 60. <i>Behnia</i> Didrichs. | ... |
| 22. Inflorescence a head | ... | 23 |
| Inflorescence a raceme, spike, panicle, or corymb | ... | 25 |
| 23. Filaments connate; flowers regular or almost so | ... | 24 |
| Filaments free; flowers, especially the outer ones, prominently bilabiate | 56. <i>Daubenya</i> Lindl. | ... |
| 24. Filaments united at the base into a cup | 54. <i>Massonia</i> Thunb. | ... |
| Filaments united into a tube as long as the perianth | 55. <i>Androsiphon</i> Schltr. | ... |
| 25. Stem leafy to the apex | 3. <i>Sandersonia</i> Hook. f. | 26 |
| Leaves basal or in a terminal rosette | ... | ... |

26. The 3 inner perianth-segments connivent and differing from the 3 outer
 33. *Albuca* Linn. ... 27
 Perianth-segments all equal or subequal
27. Underground part a bulb 28
 Underground part not a bulb 47
28. Filaments connate at the base 29
 Filaments free... .. 32
29. Inflorescence a corymb; stamens in 2 rows 50. *Polyxena* Kunth
 Inflorescence a lax raceme, sometimes densely subspicate or head-like;
 stamens in 1 row 30
30. Perianth-segments longer than the tube; inflorescence a dense sub-
 spiculate raceme 52. *Whiteheadia* Harv.
 Perianth-segments shorter than the tube; inflorescence a lax raceme or a
 shortly peduncled raceme or sometimes the raceme head-like ... 31
31. Leaves linear 53. *Neopatersonia* Schönl.
 Leaves elliptic or ovate 51. *Neobakeria* Schltr.
32. Perianth-tube 0; stamens hypogynous or inserted at the base of the
 perianth-segments 33
 Perianth-tube present; stamens inserted on the perianth-tube ... 38
33. Lower portion of filaments coloured, flattened, strongly incurved,
 leaving longitudinal interstices ... 34. *Thuranthos* C. H. Wright
 Filaments not as above 34
34. Stems climbing or erect 19. *Schizobasis* Baker
 Stems 0; leaves and inflorescence arising from the bulb 35
35. The 3 inner perianth-segments cucullate at the apex
 45. *Drimiopsis* Lindl.
 The 3 inner perianth-segments not cucullate at the apex 36
36. Perianth deciduous; seeds discoid, often winged
 35. *Urginea* Steinh.
 Perianth persistent; seeds globose or angled by pressure 37
37. Flowers usually blue or mauve-purple 42. *Scilla* Linn.
 Flowers usually white or yellow ... 44. *Ornithogalum* Linn.
38. Flowers solitary or 2-nate 41. *Litanthus* Harv.
 Flowers arranged in a raceme, more rarely in a spike 39
39. Perianth-segments unequal 40
 Perianth-segments equal, more rarely subequal 41
40. Perianth deciduous; the outer segments usually longer than the inner
 40. *Dipcadi* Medik.
 Perianth persistent; the inner segments usually longer than the outer
 49. *Lachenalia* Jacq.
41. Ovary with 2 ovules in each chamber 48. *Veltheimia* Gleditsch.
 Ovary with few to many ovules in each chamber 42
42. Anthers connivent 39. *Rhadamanthus* Salisb.
 Anthers not connivent 43
43. Perianth-segments falcate; seeds globose 46. *Hyacinthus* Linn.
 Perianth-segments not falcate; seeds discoid or angled by pressure ... 44

44. An inconspicuous plant with narrow terete leaves
 36. Urgineopsis Compton
 More or less robust plants; leaves not narrow and terete 45
45. Stamens inserted below the perianth-throat **37. Galtonia** Dcne.
 Stamens inserted in the perianth-throat 46
46. Perianth-tube campanulate **38. Drimia** Jacq.
 Perianth-tube cylindric, slightly curved **47. Pseudogaltonia** O. Kuntze
47. Ovules 2 in each ovary-chamber, more rarely only 1 48
 Ovules several or many in each ovary-chamber 51
48. Perianth-tube cylindric **58. Sansevieria** Thunb.
 Perianth-tube 0 or very short 49
49. Leaves in dense rosettes; flowers 1—3 on a short peduncle from the
 centre of the rosette of leaves **18. Nanolirion** Benth.
 Inflorescence a panicle or raceme 50
50. Perianth spirally twisted when faded **17. Caesia** R. Br.
 Perianth, if persistent, not spirally twisted **12. Bubinella** Kunth
51. Perianth-tube 0 or tube shortly campanulate 52
 Perianth with a distinct tube or with the segments cohering to form an
 apparent tube 55
52. Flowers pedicelled, axillary in the upper leaves
 11. Campitorrhiza Phill.
 Inflorescence a spike, raceme, or panicle 53
53. Inflorescence a dense spike **23. Notosceptrum** Benth.
 Inflorescence a raceme or panicle 54
54. Fruit deeply 3-lobed; seeds discoid **16. Chlorophytum** Ker
 Fruit not distinctly lobed; seeds 3-angled **14. Anthericum** Linn.
55. Leaves not thick and fleshy 56
 Leaves thick and fleshy 57
56. Perianth-tube cylindric or funnel-shaped, longer than the segments
 22. Kniphofia Moench.
 Perianth-tube campanulate or funnel-shaped, short or almost obsolete,
 shorter or as long as the segments **15. Liriothamnus** Schltr.
57. Perianth-tube curved, cylindric in the upper half, ventricose in the lower
 half; stamens about as long as the perianth; seeds winged
 26. Gasteria Duval
 Perianth-tube straight; cylindric or oblong-cylindric, or segments co-
 hering to form an apparent tube, or perianth 2-lipped; stamens
 included or exerted 58
58. Perianth 2-lipped 59
 Perianth not 2-lipped 60
59. Leaves long, narrowly linear **25. Leptaloe** Stapf
 Leaves short and fleshy **28. Haworthia** Duval
60. Leaves articulated above the dilated base **29. Chortolirion** Berger
 Leaves not articulated 61

61. Leaves usually in a basal or terminal rosette, rarely with leafy stems but then flowers reddish or yellow ... 24. *Aloe* Linn.
 Stems leafy; leaves short, thick, multifarious or quinquelfarious; flowers usually whitish ... 27. *Apicra* Willd.

963 1. *GLORIOSA* Linn., Sp. Pl., ed. 1, p. 305 (1753)

Perianth-tube 0; segments equal, clawed, spreading or reflexed, persistent. *Stamens* hypogynous; filaments filiform; anthers linear-oblong, versatile, dehiscent extrorsely near the margin. *Ovary* sessile, oblong in outline, with many ovules in each chamber; style filiform, trifurcate at the apex. *Fruit* coriaceous, septicidally 3-valved. *Seed* globose, bright red; endosperm firm.

Rootstock tuberous; stems slender, usually elongated and scandent; leaves sessile, with the apex terminating in a tendril; inflorescence corymbose; flowers few, large, showy.

Species 4—5, found in Africa and tropical Asia; 2 species (perhaps only forms of a single species) recorded from South Africa, extending from the Transvaal and Natal to the Bathurst district. (Type: *G. superba* Linn.)

964 2. *LITTONIA* Hook. f., Bot. Mag., t. 4723 (1853)

Perianth-tube very short; segments equal, ascending. *Stamens* much shorter than the perianth; filaments filiform; anthers linear-oblong, versatile, dehiscent extrorsely. *Ovary* sessile, oblong in outline, deeply 3-grooved, with many ovules in each chamber; style short, cylindric, with 3 falcate branches. *Fruit* coriaceous, septicidally 3-valved.

Rootstock tuberous; stems simple or branched, leafy to the apex; leaves produced into a tendril at the apex; flowers solitary from the axils of the upper leaves.

An African genus of 7 species of which 1 occurs in South Africa and extends from the northern Transvaal and Natal to the East London district and is also found in the eastern part of the Orange Free State. (Type: *L. modesta* Hook. f.)

965 3. *SANDERSONIA* Hook. f., Bot. Mag., t. 4716 (1853)

Perianth-tube globose, constricted at the mouth, saccate at the base; segments short, broadly ovate, shorter than the tube. *Stamens* much shorter than the perianth-tube; filaments filiform; anthers oblong, versatile, dehiscent extrorsely. *Ovary* oblong in outline, deeply 3-lobed, with many ovules in each chamber; style short, cylindric, trifid at the apex.

Rootstock tuberous; stem leafy to the apex; leaves sessile, alternate, linear or lanceolate; flowers solitary in the axils of the upper leaves; pedicels cernuous, without bracts.

Endemic; species 1, extending from Zululand into Pondoland. (Type: *S. aurantiaca* Hook. f.)

969 4. *ANDROCYMBIUM* Willd., in Mag. Ges. Naturf. Fr. Berlin, vol. 2, p. 21, t. 2 (1808)

Perianth-tube 0; segments subequal, with a distinct canaliculate claw and an acute lamina with incurved edges. *Stamens* inserted at the junction of the claw and lamina; filaments filiform, thickened towards the base; anthers oblong, versatile, dehiscent laterally. *Ovary* sessile, with many ovules in each chamber; styles 3, distinct; stigmas minute. *Fruit* a septicidal capsule. *Seed* globose; endosperm firm.

Underground stems an ovoid corm with membranous tunics; stem simple, short or 0; leaves crowded in the acaulescent species; inflorescence a globose head, over-topped by the exterior bracts.

Species about 35, mostly South African; 1 species in tropical Africa; 1 species found in Palestine; the South African species found chiefly in South West Africa and Namaqualand to Clanwilliam and the north-western districts; some species also found in the central districts and extend to the Albany, Humansdorp, and Knysna districts; species less frequent in the south-western districts, Natal, and the Transvaal.

970 5. BAEOMETRA Salisb., Trans. Hort. Soc., vol. 1, p. 330 (1812)

Perianth-tube 0; segments subequal, with a long convolute claw. *Stamens* inserted at the junction of the perianth-claw and blade; filaments subulate, tapering upwards; anthers versatile, dehiscent along the margin. *Ovary* sessile, cylindric, 3-angled, with many ovules in each chamber; styles 3, short, spreading. *Fruit* 3-angled, much longer than broad, septicidally 3-valved. *Seed* brown, globose or angled by pressure; endosperm cartilaginous.

Underground stem a corm; stem simple; leaves several; lower leaves lanceolate, clasping the stem, gradually reduced upwards; inflorescence a raceme or flowers solitary.

Endemic; species 1, extending from the Clanwilliam to the Riversdale districts. (Type: *B. columellaris* Salisb.)

971 6. DIPIDAX Laws., Cat. 8 ex Salisb. in Trans. Hort. Soc., vol. 1, p. 330 (1812)

Perianth deciduous; tube 0; segments subequal, clawed, with a pair of nectariferous spots at the base of the blade. *Stamens* inserted on the claw of the perianth-segments; filaments subulate; anthers oblong, versatile, dehiscent extrorsely along the margin. *Ovary* sessile, 3-lobed, with many ovules in each chamber; styles 3, subulate, falcate. *Fruit* turbinate, septicidally 3-valved. *Seed* brown, subglobose; endosperm firm.

Underground stems a tunicated corm; leaves generally 3, persistent; inflorescence a few- or many-flowered spike.

Endemic; species 2, extending from the Clanwilliam to the Humansdorp and Port Elizabeth districts. (Type: *D. triquetra* (L. fil.) Bkr. = *D. rosea* Salisb.)

971a 7. NEODREGA C. H. Wright, Kew Bull., p. 308 (1909)

Perianth-tube 0; segments shortly clawed, with auricles just above the claw. *Filaments* filiform; anthers small, dorsifixed. *Ovary* deeply 3-lobed, with the carpels diverging at the apex, with about 6 ovules in each ovary-chamber. *Fruit* a loculicidal capsule. *Seed* lenticular.

Underground stem a tunicated bulb; leaves cauline, alternate, sessile; inflorescence a lax terminal spike.

Endemic; species 1, extending from the Albany to the Port Elizabeth and Knysna districts. (Type: *N. glassii* C.H.W.)

972 8. WURMBEA Thunb., Nov. Gen. Pl., p. 18, t. 1 (1781)

Perianth persistent; tube campanulate or cylindric; segments equal, spreading, with 2 glandular foveoles above the base. *Stamens* inserted at the base of the perianth-segments; filaments filiform; anthers oblong, versatile, dehiscent extrorsely near the margin. *Ovary* sessile, 3-lobed at the apex, with many ovules in each chamber; styles free, subulate. *Fruit* globose, septicidally 3-valved. *Seed* brown, subglobose; endosperm firm.

Underground stems a tunicated corm; stem simple, with a few narrow leaves; inflorescence a spike; bracts 0.

Species 8, found in Africa and Australia; 3 species in South Africa, extending from Natal, through the coastal districts to the Clanwilliam district; also recorded from the Somerset East and Aliwal North districts. (Type: *W. spicata* (Burm.) Dur. and Sch. = *W. capensis* Thunb.)

973 9. ORNITHOGLOSSUM Salisb., Parad. Lond., t. 54 (1806)

Perianth persistent; tube 0; segments equal, spreading or reflexed, clawed, with a nectariferous foveole at the top of the convolute claw. *Stamens* inserted at the base of the perianth-segments; filaments filiform; anthers dorsifixed, versatile, dehiscent extrorsely near the margin. *Ovary* sessile, oblong in outline, with many ovules in each ovary-chamber; styles 3, subulate. *Fruit* loculicidally 3-valved. *Seed* subglobose, fleshy; endosperm cartilaginous.

Underground stems a corm with a long neck; leaves about 6, clasping the stem at the base; inflorescence a corymb or raceme.

Described species 4; 1 species extending from South West Africa to the Cape and over the central districts, the Transvaal, the Orange Free State, and Bechuanaland and also found in tropical Africa; 2 species only recorded from South West Africa; 1 species of which the locality is unknown. (Type: *O. viride* (L. fil.) Ait. = *O. glaucum* Salisb.)

975 10. IPHIGENIA Kunth, Enum. Pl., vol. 4, p. 212 (1843)

Perianth-tube 0; segments caducous, equal, spreading, obscurely clawed. *Stamens* shorter than the perianth-segments; filaments slightly or much thickened; anthers minute, versatile. *Ovary* sessile, subglobose, with many ovules in each chamber; styles 3, falcate. *Fruit* subglobose or obovoid, loculicidally 3-valved. *Seed* brown, subglobose, with a small appendage.

Underground stem a tunicated corm; stem producing few or many distant leaves; flowers inconspicuous, usually solitary in the axils of the upper leaves.

Species 21, found in Africa, Madagascar, India, Australia, and New Zealand. (Type: *I. indica* (Linn.) Kunth)

NOTE.—This genus probably does not occur in South Africa.—E. P. P.

975a 11. CAMPTORRHIZA Phill., Fl. Pl. S. Afr., pl. 575 (1935)

Perianth-tube 0; segments persistent, concave, oblong. *Stamens* 6, as long as the perianth-segments, persistent; filaments expanded and thickened below; anthers versatile, with lateral dehiscence. *Ovary* globose, with several ovules in each chamber; style simple, entire at the apex. *Fruit* not seen.

Rootstock tuberous, with an elbow-bend; leaves few, cauline; flowers pedicelled, axillary in the upper leaves.

An endemic genus, recorded from the Pretoria and Pietersburg districts of the Transvaal and also from South West Africa; about 3 species known and previously referred to the genus *Iphigenia* Kunth (Type: *C. schlechteri* (Engl.) Phill.)

984 12. BULBINELLA Kunth, Enum. Pl., vol. 4, p. 569 (1843)

Perianth-tube 0; segments subequal, 1-nerved. *Stamens* hypogynous or attached to the base of the perianth-segments; filaments filiform or slightly flattened; anthers dorsifixed, versatile, dehiscent introrsely. *Ovary* sessile, subglobose, with 2 ovules in each chamber; style cylindric; stigma capitate. *Fruit* globose, opening loculicidally. *Seeds* black, often solitary; endosperm fleshy.

Roots fleshy, fascicled; leaves radical, terete or flat; inflorescence a raceme; peduncle leafless; flowers whitish or yellow; pedicels articulated at the apex.

Species about 15—16, mostly South African; 2 species found in New Zealand

and 1 species in the Campbell and Auckland Islands; the South African species extend from Little Namaqualand, through the coastal districts to Natal and the Transvaal. (Type: *B. triquetra* (L. fil.) Kunth)

985

13. BULBINE Willd., Enum., p. 372 (1800)

Perianth-tube 0; segments subequal, 1-nerved, spreading or reflexed when fully expanded. *Stamens* hypogynous or fixed to the base of the perianth-segments, shorter than the segments; filaments densely bearded; anthers dorsifixed, versatile, dehiscent introrsely. *Ovary* globose, with 4 to many ovules in each chamber; style filiform; stigma capitate. *Fruit* membranous, globose or turbinate, loculicidally 3-valved. *Seed* black, angled by pressure; endosperm fleshy.

Acaulescent or caulescent herbs; rootstock often tuberous; leaves fleshy, subterete or linear or lanceolate; inflorescence a raceme; pedicels articulated at the apex; bracts membranous, persistent; flowers usually bright yellow.

Species about 55, mostly African; 2 species found in Australia and about 4 species in tropical Africa; the remainder confined to South Africa and widely distributed. (Type: *B. frutescens* (L.) Willd.)

989

14. ANTHERICUM Linn., Sp. Pl., ed. 1, p. 310 (1753)

Perianth marcescent, not twisted after flowering; tube 0; segments spreading, subequal, 3—5-nerved on the keel. *Stamens* hypogynous or adnate to the very base of the perianth-segments; filaments filiform or slightly compressed; anthers basifixed, versatile, dehiscent introrsely. *Ovary* sessile, globose, with several ovules in each chamber; style subulate; stigma capitate. *Fruit* coriaceous, loculicidally 3-valved. *Seed* black, 3-angled; embryo cylindric; endosperm firm.

Rootstock a short rhizome; roots wiry or cylindric, often fleshy; radical leaves usually linear or subterete; inflorescence a raceme or panicle; pedicels often 2—3-nate, articulated at the middle or at the apex; bracts small, scarious.

About 345 species have been described as belonging to the genus *Anthericum*; 109 species described from South Africa; species of the genus are mainly massed in Africa, a few found in Madagascar, South America, New Zealand, and Japan. (Type: *A. ramosum* Linn.)

NOTE.—K. Krause (*Engl. and Prantl. Pflanzen. Fam.*, ed. 2, Band. 15.a, p. 283 (1930)), gives the number of species as about one hundred.—E. P. P.

989a

15. LIRIOTHAMNUS Schltr., Notizbl. Bot. Gart. und Mus. Berlin-Dahlem, vol. 9, p. 146 (1924)

Perianth with a short tube; segments subequal, narrow or linear-oblong, obtuse, uninerved, slightly spreading, glabrous. *Stamens* suberect, inserted at the base of the perianth; filaments subulate, slightly narrowed above, almost $\frac{1}{2}$ as long as the perianth; anthers ovate-oblong, subacute, dorsifixed. *Ovary* ovoid, 3-angled, with 5—7 or many ovules in each chamber; style filiform, almost as long as the stamens; stigma simple. *Fruit* a capsule.

Erect branched plants sometimes up to 6 ft. high, sometimes stem woody; branches leafy all the way up and densely leafy at the apex; leaves erect-spreading, linear or ligulate, entire or toothed, glabrous; inflorescence axillary and simple or a raceme; flowers white or greenish-white; bracts sometimes subamplexicaul, acute, about as long as the pedicels.

Endemic; species 2, one found in Namaqualand, the other in the Van Rhynsdorp district. (Type: *L. involucratus* (Bkr.) Schltr. = *Anthericum involucratum* Bkr.)

990 16. CHLOROPHYTUM Ker, Bot. Mag., t. 1071 (1808)

Perianth marcescent, not twisted after flowering; tube 0; segments subequal; spreading, 3—7-nerved. *Stamens* hypogynous or adnate to the base of the perianth-segments; filaments filiform, often dilated above the middle; anthers basifixed, dehiscent introrsely. *Ovary* sessile, ovoid, with 4 or more ovules in each chamber; style filiform; stigma capitate. *Fruit* deeply 3-lobed, acutely angled, loculicidally 3-valved. *Seed* black, discoid; embryo cylindric; endosperm firm.

Rootstock a small rhizome; roots fibrous or swollen and fleshy; radical leaves linear and sessile or broader and petioled; inflorescence a raceme or panicle; pedicels articulated.

Species about 215, mostly Africa, but also found in South America, India, Tasmania, Australia, and Madagascar; 25 species in South Africa, extending from Natal to Namaqualand. (Type: *C. inornatum* Ker)

1002 17. CAESIA R. Br., Prodr., p. 277 (1810)

Perianth marcescent, spirally twisted when faded; perianth-tube very short; segments subequal, 3-nerved. *Stamens* attached to the base of the perianth-segments; filaments filiform; anthers dorsifixed, dehiscent introrsely. *Ovary* sessile, globose, with 2 ovules in each chamber; style filiform; stigma capitate. *Fruit* globose, loculicidally 3-valved. *Seed* black, 3-angled, solitary in each loculus, crustaceous, papillose; endosperm fleshy.

Rhizomes short; leaves linear, grass-like; inflorescence a lax raceme or panicle; pedicels articulated at the apex, often 2—3-nate.

Species 9, of which 6 occur in Australia; 3 species found in South Africa, extending from the Clanwilliam to the Albany district. (Type: *C. vittata* R. Br.)

1005 18. NANOLIRION Benth. in Benth. et Hook. f., Gen. Plant., vol. 3, p. 793 (1883)

Perianth marcescent, spirally twisted after flowering; tube 0; segments subequal, obscurely 3-nerved. *Stamens* hypogynous or the 3 inner attached to the base of the perianth-segments; filaments flattened; anthers dorsifixed, with introrse dehiscence. *Ovary* sessile, with 2 ovules in each chamber; style filiform; stigma capitate. *Fruit* subglobose, loculicidally 3-valved.

A dwarf plant, with a slender creeping rhizome; leaves in dense rosettes, subterete; flowers 1—3 on a short peduncle from the centre of the rosette of leaves.

Endemic; species 1, only known from the Great Winterhoek in the Tulbagh district. (Type: *N. capense* Benth.)

1010 19. SCHIZOBASIS Baker, Journ. Bot., vol. 11, p. 105 (1873)

Perianth marcescent; tube 0; segments subequal, 1-nerved. *Stamens* attached to the base of the perianth-segments; filaments slightly flattened; anthers dorsifixed, versatile, dehiscent introrsely. *Ovary* sessile, with 4—7 ovules in each chamber; style cylindric; stigma 3-lobed. *Fruit* membranous, loculicidally 3-valved. *Seeds* black, 1—3 in each loculus, turgid or angled by pressure; endosperm fleshy.

Underground stems a bulb with membranous tunics; stem climbing or erect; leaves radical; inflorescence a raceme or panicle or flowers solitary; pedicels solitary, articulated at the apex.

Species 9, of which number 1 occurs in Rhodesia and 1 in tropical Africa; the remaining 7 species found in South Africa and extend from South West Africa to the Transvaal; found also in the central districts as far south as Somerset East but not recorded from the coastal belt. (Type: *S. macowani* Bkr.)

1011 20. BOWIEA Harv. ex Hook. f. in Bot. Mag., t. 5619 (1867)

Flowers bisexual, with occasional unisexual flowers. *Perianth* marcescent; tube 0; segments reflexing. *Stamens* perigynous, much shorter than the perianth; filaments slightly flattened; anthers versatile, dehiscent introrsely. *Ovary* sessile, ovoid, with many ovules in each chamber; style short, cylindric; stigma obscurely 3-lobed. *Fruit* membranous, dehiscent loculicidally. *Seed* black, shining, oblong, compressed; endosperm fleshy.

Underground stem a large bulb; produced leaves 1—2, vanishing very early; stem tall, with many pinnate branches; flowers solitary.

Endemic; species 1, extending from Natal to the Katberg; also found in the eastern Orange Free State and the northern Transvaal. (Type: *B. volubilis* Harv.)

1012 21. ERIOSPERMUM Jacq., Collect., vol. 5, suppl. 72 (1796)

Perianth marcescent; tube 0; segments subequal, 1-nerved. *Stamens* attached to the base of the perianth-segments; filaments lanceolate or filiform; anthers dorsifixed, dehiscent introrsely. *Ovary* subsessile, globose, with few (rarely 2) ovules in each chamber; style subulate; stigma capitate. *Fruit* coriaceous, loculicidally 3-valved down to the base, with the valves persistent. *Seeds* few, densely and persistently pilose; embryo long, cylindric, often projecting beyond the fleshy endosperm.

Rootstock large and tuberous; leaves usually solitary, produced after the flowers, simple or much divided, glabrous or hairy; inflorescence a raceme; bracts minute.

An African genus of 80 species, of which number 79 have been recorded in South Africa; the species extend from South West Africa to Natal and the Transvaal; rare in the central districts, but recorded from the Somerset East, Graaff-Reinet, and Barkly West districts. (Type: *E. lanceaefolium* Jacq.)

1024 22. KNIPHOFIA Moench., Method., p. 631 (1794)

Perianth-tube long, cylindric or funnel-shaped; segments subequal, small, much shorter than the tube. *Stamens* hypogynous, as long as the perianth or longer; the 3 stamens opposite the inner segments longer than the others; filaments filiform; anthers dorsifixed, versatile, dehiscent introrsely. *Ovary* sessile, ovoid, with many ovules in each chamber; style long, filiform; stigma minute, capitate. *Fruit* globose or slightly ovoid, with loculicidal dehiscence. *Seed* acutely 3-angled, punctate; endosperm fleshy.

Rootstock fibrous; leaves radical, persistent, narrowing gradually to the apex; inflorescence a subspicate raceme; peduncle long, naked; pedicels articulated at the apex; bracts scarious, persistent, longer than the pedicels.

A typical African genus of 68 species with 2 species recorded from Madagascar; 38 species described from South Africa, extending from the Transvaal, Zululand, Natal, and eastern Orange Free State to the Cape; also recorded from the Somerset East, Graaff-Reinet and Aliwal North districts. (Type: *K. alooides* Moench.)

1025 23. NOTOSCEPTRUM Benth. in Benth. et Hook. f. Gen. Plant., vol. 3, p. 775 (1883)

Perianth-tube very short or almost obsolete; segments subequal, as long as or longer than the tube; 3 outer segments 3-nerved; 3 inner segments 1-nerved. *Stamens* hypogynous; filaments rather flattened, as long as the perianth; anthers dorsifixed, versatile, dehiscent introrsely. *Ovary* ovoid, with 4—6 ovules in each chamber; style declinate, longer than the stamens; stigma entire. *Fruit* subglobose, with loculicidal dehiscence. *Seeds* black, few, angled.

Rootstock a short thick rhizome; leaves radical, crowded; inflorescence a dense spike; peduncle simple.

Species 5; 2 in Angola; 3 species in South Africa, found in the northern Transvaal and Natal. (Type: *N. alooides* (Bolus) Benth.)

NOTE.—It is doubtful whether this is generically distinct from *Kniphofia*.—E. P. P.

1026

24. ALOE Linn., Sp. Pl., p. 319 (1753)

Perianth lobed to the middle or lower forming a campanulate or cylindric tube; segments elongated, much imbricated, spreading only at the tip, if at all. *Stamens* 6, hypogynous, equalling or exceeding the perianth; filaments subulate; anthers dorsifixed, versatile, dehiscent introrsely. *Ovary* sessile, oblong in outline, slightly 3-angled, with many ovules in each chamber; style filiform; stigma small, capitate. *Fruit* coriaceous, oblong in outline, bluntly 3-angled, loculicidally 3-valved. *Seed* 3-angled or flattened, often winged; endosperm fleshy; embryo straight.

Acaulescent plants or caulescent, with simple or branched stems, seldom scrambling; leaves fleshy, usually crowded in a dense rosette, toothed or prickly on the margins and sometimes also on the surface; inflorescence a panicle, raceme, or corymb; pedicels solitary; bracts persistent.

Described species about 250 found in Africa, Madagascar, Socotra, India, China, Arabia, and the Mediterranean region; 129 species recorded from South Africa, widely distributed. (Type: *A. perfoliata* Linn.)

1026a

25. LEPTALOE Stapf, Bot. Mag., t. 9300 (1933)

Perianth 2-lipped, curved, with the segments tightly conniving into a tube except at the tips. *Stamens* 6, hypogynous, exerted from the throat of the perianth but shorter than the segments; anthers dorsifixed, with introrse dehiscence. *Ovary* sessile, 6-grooved, 3-chambered; style longer than the stamens; stigma minute. *Fruit* crustaceous or subcoriaceous, with loculicidal dehiscence. *Seed* 3-angled, winged; endosperm fleshy.

—Acaulescent; leaves spirally arranged, somewhat fleshy, narrowly linear, minutely spinose-toothed on the margins; inflorescence a contracted raceme; pedicels solitary; bracts persistent.

An endemic genus of 6 species found in Natal, Zululand, and the north-eastern districts of the Transvaal; 1 species recorded from the Albany district. (Type: *L. albida* Stapf = *A. kraussii* var. *minor* Bkr.)

NOTE.—Mr. G. W. Reynolds, who has made a special study of the South African species of *Aloe*, is in agreement with Berger that the genus *Leptaloe* should remain a section of the genus *Aloe*. See *Journ. S. Afr. Bot.*, vol. 13, p. 99 (1947). It was, however, too late to change my typescript.—E. P. P.

1027

26. GASTERIA Duval, Pl. Succul. in Horto Alenconio (1809)
ex Haw. Syn. Pl. Succul., p. 85 (1812)

Perianth-tube curved, cylindric in the upper half, ventricose in the lower half; segments subequal, ovate, shorter than the tube. *Stamens* hypogynous, about as long as the perianth; filaments filiform; anthers dorsifixed, versatile, dehiscent down the face. *Ovary* sessile, oblong in outline, 3-angled, with numerous ovules in each chamber; style filiform; stigma capitate, slightly 3-lobed. *Fruit* chartaceous, loculicidally 3-valved. *Seed* compressed, winged; endosperm fleshy; embryo axile.

Stem short or none; leaves thick, fleshy, distichous or multifarious, usually spotted with white; inflorescence a lax raceme; pedicel articulated at the apex; bracts small, persistent.

Endemic; species about 63, mainly in the central districts, but also found in the coastal belt and extend into Natal and the Transvaal.

- 1028** **27. APICRA** Willd., Ges. naturf. Freunde Berlin Mag., vol. 5, p. 271 (1811) ex parte

Perianth-tube straight, oblong-cylindric; segments subequal, spreading at the tip, with 3 green stripes down the keel. *Stamens* hypogynous, shorter than the perianth; filaments filiform; anthers versatile, dehiscing introrsely. *Ovary* sessile, 3-angled, with numerous ovules in each chamber; style short, subulate; stigma capitate. *Fruit* coriaceous, oblong in outline, 3-angled, loculicidally 3-valved. *Seed* compressed; endosperm fleshy.

Stems always elongated, leafy; leaves short, thick, fleshy; multifarious or quinquefarius; inflorescence a subspicate raceme or panicle; pedicels short, ascending; bracts small, ovate.

Endemic; species 11, extending from the Riversdale, Alexandria and Albany districts into the central districts.

- 1029** **28. HAWORTHIA** Duval, Pl. Succul. in Horto Alenconio (1809) ex Haw. Syn. Pl. Succul. p. 90 (1812)

Perianth bilabiate, with the segments variously cohering to form an apparent straight or oblong-cylindric tube; segments subequal; the 3 lower segments reflexing more than the 3 upper. *Stamens* 6, hypogynous, shorter than the perianth; filaments filiform; anthers versatile, dehiscing introrsely. *Ovary* sessile, oblong in outline, 3-angled, with numerous ovules in each chamber; style subulate; stigma capitate. *Fruit* chartaceous, oblong in outline, 3-angled, loculicidally 3-valved. *Seed* compressed, acutely angled; endosperm fleshy; embryo axile.

Stems short or elongated; leaves short, thick, fleshy, generally multifarious, often tubercled, sometimes toothed or ciliate on the edges and keel; inflorescence a raceme or panicle; pedicels short, ascending; bracts small; perianth whitish, ribbed with green or reddish brown.

Endemic; species about 60, fairly widely distributed, but absent from the Transvaal. (Type: *H. arachnoidea* (L.) Duval)

- 1029a** **29. CHORTOLIRION** Berger in Engl. das. Pflanzenr., vol. 4, no. 38 (3.2), p. 72 (1908)

Perianth subsessile, subbilabiate, with the segments united at the base and variously cohering to form an apparent obclavate-cylindric tube; 3 upper segments straight; 3 lower segments usually slightly recurved. *Stamens* 6; filaments slightly unequal, shorter than the perianth-tube; anthers oblong, dehiscing introrsely. *Ovary* with several ovules in each chamber; style straight, gradually merging into the ovary; stigma capitate. *Fruit* oblong-conical, more or less acuminate.

Small perennial plants, scarcely succulent; leaves basal, spirally arranged, narrowly linear or grass-like, much widened at the base and congested into a round or oval bulb, once or twice articulated above the dilated base, with the portion above the articulation deciduous; margins of leaf denticulate with recurved teeth; peduncle slender, simple, bearing a few empty bracts; raceme lax, subsecund; flowers shortly pedicelled; bracts deltoid-ovate, cuspidate.

An African genus of 4 species; 1 species found in Angola; 3 species recorded from Bechuanaland and the Transvaal. (Type: *C. angolensis* (Bkr.) Berger)

- 1046** **30. AGAPANTHUS** L'Hér., Sert. Angl., p. 17 (1788)

Perianth-tube tubular; segments subequal, much longer than the tube. *Stamens* inserted in the throat of the perianth-tube; filaments filiform, as long as the perianth-segments; anthers dorsifixed, dehiscing introrsely. *Ovary* sessile, with numerous ovules in each chamber; style filiform; stigma

minute. *Fruit* coriaceous, elongate-oblong in outline, loculicidally 3-valved. *Seed* blackish, flat, with an oblong wing.

Rootstock tuberous; leaves radical; inflorescence a large umbel; peduncle stout, naked; spathe-valves 2.

Endemic; species 8, extending from the Cape to Natal, the eastern Orange Free State, and the eastern Transvaal. (Type: *A. umbellatus* L'Hér.)

1047 31. TULBAGHIA Linn., Mant., vol. 2, p. 148 (1771)

Perianth-tube oblong or cylindric, with a corona in the throat that is either entire and annular or of 3 distinct processes; segments subequal, spreading, generally shorter than the tube. *Stamens* in 2 series, inserted in the perianth-tube; filaments short; anthers dorsifixed, dehiscing introrsely. *Ovary* sessile, with many ovules in each chamber; style short, columnar; stigma capitate. *Fruit* chartaceous, oblong in outline, loculicidally 3-valved. *Seed* black, oblong, compressed; endosperm fleshy.

Rootstock tuberous; leaves radical, linear or lorate, somewhat fleshy; inflorescence an umbel; peduncle naked; spathe-valves 2.

An African genus of 26 species, 20 of which are recorded from South Africa and widely distributed. (Type: *T. capensis* Linn.)

1049 32. ALLIUM Linn., Sp. Pl., ed. 1, p. 294 (1753)

Perianth-tube 0; segments subequal, spreading or permanently connivent. *Stamens* attached to the base of the perianth-segments; filaments filiform or flattened; the 3 inner tricuspidate; anthers dorsifixed, dehiscing introrsely. *Ovary* sessile or shortly stipitate, with usually 2 ovules in each chamber (ovules 2 in the only South African species); style filiform, usually inserted into a central hollow of the ovary; stigma capitate or tricuspidate. *Fruit* membranous, globose, dehiscing loculicidally. *Seed* black, angled; endosperm fleshy.

Underground stems a tunicated bulb or short rhizome; leaves all radical, but often sheathing the base of the peduncle for some distance; inflorescence an umbel; spathe-valves usually 2, membranous.

Species about 280, concentrated in the north temperate zone of both hemispheres; a single native species in South Africa, which extends from Namaqualand to the Uitenhage district, but also recorded from the Graaff-Reinet and Queenstown districts and from the Orange Free State. (Type: *A. sativum* Linn.)

1079 33. ALBUCA Linn., Sp. Pl., ed. 2, p. 438 (1762)

Perianth persistent; tube 0; segments unequal; the 3 outer segments oblong, more or less spreading; the 3 inner segments shorter, permanently connivent, cucullate and furnished with a large gland at the apex. *Stamens* hypogynous, all fertile or the anthers of the 3 outer small and imperfect or absent; filaments often winged and dilated at the base; anthers versatile, dehiscing introrsely. *Ovary* sessile, with many ovules in each chamber; style usually obconic, 3-angled, rarely cylindric; stigma 3-lobed. *Fruit* membranous, ovoid, 3-angled, loculicidally 3-valved. *Seed* black, compressed, sometimes almost winged; endosperm fleshy.

Underground stem a tunicated bulb; leaves all radical, flat and tapering to a long point or terete; inflorescence a raceme; bracts acuminate; flowers yellow or white, usually broadly keeled with green or reddish brown, rarely entirely green.

Species 131, mainly African; 77 species described from South Africa, extending from South West Africa to Natal and widely distributed in the central districts; a few species found in Arabia, the remainder in tropical Africa. (Type: *A. major* Linn.)

1079a 34. THURANTHOS C. H. Wright, Kew Bull., p. 233 (1916)(*Drimia macrantha* Bkr. of Fl. Cap.)

Perianth persistent; tube 0; segments 6, equal, 1-nerved, reflexed. *Stamens* 6; lower portion of filaments coloured, flattened and strongly incurved, leaving longitudinal interstices; upper portion terete, connivent; anthers oblong, dorsifixed. *Ovary* 3-lobed, with many ovules in each chamber; style cylindric; stigma discoid.

Underground stem a bulb covered with thick fleshy tunics; leaves appearing after the flowers, linear; inflorescence a lax raceme; pedicels several times longer than the flowers; bracts small.

Endemic; species 1, perhaps 3, recorded from the Zululand, Natal, and the East London, Komgha, Kentani, Kokstad, Uitenhage, and Queenstown districts of the Cape Province. (Type: *T. macranthum* (Bkr.) C. H. W.)

1080 35. URGINEA Steinheil in Ann. Sc. Nat., vol. 2, ser. 1, p. 321 (1834)

Perianth deciduous; tube 0; segments subequal, 1-nerved on the keel (in the South African species). *Stamens* inserted at the base of the perianth-segments; filaments filiform or flattened at the base or middle; anthers versatile, dehiscent introrsely. *Ovary* sessile, ovoid, with few or many ovules in each chamber; style filiform; stigma capitate. *Fruit* membranous, globose, 3-angled, loculicidally 3-valved. *Seed* black, discoid, often winged; endosperm fleshy.

Underground stem a tunicated bulb; leaves often not produced till after the flowers; inflorescence a raceme; peduncle naked; bracts often spurred either at the base or the middle; flowers whitish, with green or purple-brown keels.

Species about 105, found in Africa, the Mediterranean region, and India; 57 species described from South Africa, widely distributed over the Union.

1080a 36. URGINEOPSIS Compton, Journ. Bot., vol. 68, p. 107 (1930)

Perianth persistent; segments 6, membranous, connate in a campanulate tube, erect, never reflexed, 1-nerved. *Stamens* free, shorter than the perianth; anthers basifixed, with introrse dehiscence. *Ovary* sessile, 3-chambered; style filiform, subequalling the ovary; stigma small, thickened. *Capsule* membranous, globose, with loculicidal dehiscence. *Seeds* 2—4 in each loculus, surrounded by a pellucid wing.

An inconspicuous plant; bulb tunicated; leaves radical, narrowly terete; inflorescence a terminal raceme; scape simple, leafless.

A monotypic endemic genus found on the Cape Peninsula. A second species represented by *Bolus* 7567 and cited under *Rhadamanthus convallarioides* Salisb. in the *Flora Capensis* may belong here. (Type: *U. salteri* Compton)

NOTE.—R. S. Adamson, in the *Journ. S. Afr. Bot.*, vol. 8, p. 238 (1942), sinks the genus under *Urginea*.—E. P. F.

1081 37. GALTONIA Decne., Fl. des serres, vol. 23, p. 32 (1880)

Perianth marcescent; tube oblong or clavate; segments unequal, longer or shorter than the tube; outer segments oblong; inner segments obovate. *Stamens* inserted below the throat of the perianth-tube; filaments filiform; anthers dorsifixed, versatile, dehiscent introrsely. *Ovary* sessile, oblong in outline, 3-angled, with many ovules in each chamber; style cylindric; stigma capitate. *Fruit* membranous, oblong in outline, loculicidally 3-valved. *Seeds* black, numerous, angled by pressure; endosperm fleshy; embryo cylindric, as long as the endosperm.

Underground stem a tunicated bulb; leaves large, fleshy; inflorescence a lax raceme; peduncle naked; pedicels articulated at the apex; bracts membranous, large; flowers large, white or tinged with green.

Endemic; species 3, found in the eastern districts of the Cape Province to Zululand, also recorded from the Aliwal North district, the Orange Free State, and the Transvaal. (Type: *G. candicans* Decne.)

1082 38. DRIMIA Jacq., Icon. Pl. Rar., vol. 2, t. 373-77 (1786)

Perianth deciduous from the base; tube campanulate; segments subequal or reflexing, generally cucullate at the apex. *Stamens* inserted in the throat of the perianth-tube, shorter than the segments; filaments filiform; anthers versatile, dehiscent introrsely. *Ovary* sessile, ovoid, with 6—12 ovules in each chamber; style filiform; stigma capitate, faintly 3-lobed. *Fruit* membranous, ovoid, 3-angled, loculicidally 3-valved. *Seed* black, discoid, sometimes winged; endosperm fleshy; embryo cylindric.

Underground stem a tunicated bulb; leaves broad and rather fleshy or narrow and rigid, often produced at a different season to the flowers; inflorescence a raceme; bracts membranous, persistent.

An African genus of 44 species; 26 species recorded from South Africa, widely distributed. (Type: *D. elata* Jacq.)

1083 39. RHADAMANTHUS Salisb., Gen. of Pl., p. 37 (1866)

Perianth-tube campanulate; segments equal, about as long as the tube. *Stamens* inserted below the throat of the perianth-tube, subuniseriate; filaments flattened downwards; anthers connivent, dehiscent by oblique pores, with the thecae sometimes tailed. *Ovary* sessile, ovoid, with many ovules in each chamber; style short-columnar; stigma capitate. *Fruit* membranous, ovoid, loculicidally 3-valved. *Seeds* black, discoid, winged, 6—8 in each loculus; endosperm firm.

Underground stem a tunicated bulb; leaves produced after the flowers; inflorescence a lax raceme; peduncle naked.

Endemic; species 2 or 3, recorded from the Montagu, Oudtshoorn, and Komgha districts and the Karoo below the Roggeveld. (Type: *R. convallarioides* Salisb.)

1084 40. DIPCADI Medic. in Acta Acad. Theod.-palat., vol. 6, Phys. 431 (1790)

Perianth deciduous; tube oblong-cylindric; segments dimorphic; outer segments reflexing, convolute, often longer than the inner; inner segments connivent, many-nerved on the back, spreading only at the tip. *Stamens* inserted in or below the throat of the perianth-tube; filaments filiform; anthers linear, dorsifixed, dehiscent introrsely. *Ovary* sessile or substipitate, ovoid, with several ovules in each chamber; style cylindric; stigma capitate. *Fruit* membranous, subquadrate, loculicidally 3-valved. *Seed* black, discoid; endosperm firm in texture; embryo cylindric.

Underground stem a tunicated bulb; leaves basal, usually linear or subterete; inflorescence a lax raceme; pedicels articulated at the apex; bracts membranous; flowers usually green.

Described species 98, mostly African, but also found in Madagascar and the Mediterranean region; 36 species described from South Africa, widely distributed. (Type: *D. serotinum* Medic.)

NOTE.—In a specimen of *D. oligotrichum* Bkr. two immature fruits had four loculi each.—E. P. P.

1085 41. LITANTHUS Harv. in Hook. Lond. Journ. Bot., vol. 3, p. 314, t. 9 (1844)

Perianth deciduous; tube oblong; segments ascending, ovate, obtuse, shorter than the tube. *Stamens* inserted below the perianth-throat; filaments

shorter than the anthers; anthers with a produced emarginate connective, dehiscing introrsely. *Ovary* sessile, ovoid, with many ovules in each chamber; styles cylindric; stigma capitate. *Fruit* membranous, ovoid, loculicidally 3-valved. *Seed* black, compressed.

Bulb white, globose; leaves usually 2, produced after the flowers; flowers solitary or 2-nate; peduncle filiform, naked; bracteoles connate, spurred.

Endemic; species 1, extending from Natal and Swaziland to the Uitenhage district. (Type: *L. pusillus* Harv.)

1086 42. SCILLA Linn., Sp. Pl., ed. 1, p. 308 (1753)

(*Schizocarpus* v.d. Merwe; *Resnova* v.d. Merwe)

Perianth persistent; tube 0; segments subequal, spreading, 1-nerved. *Stamens* attached to the base of the perianth-segments; filaments filiform or slightly flattened; anthers versatile, dehiscing introrsely. *Ovary* sessile or shortly stipitate, with 2 or several ovules in each chamber; style filiform; stigma capitate. *Fruit* a 3-valved loculicidal capsule. *Seed* black, globose or angled by pressure; endosperm firm.

Underground stem a tunicated bulb; leaves all radical, subterete or flat; inflorescence a raceme; bracts small; flowers generally blue or mauve-purple.

Described species about 236, widely spread through the Old World; 79 species in South Africa, mainly confined to the eastern districts of the Cape Province, but also extend to Namaqualand, Natal, the Transvaal, the Orange Free State; a few species found in the central districts. (Type: *S. bifolia* Linn.)

1088 43. EUCOMIS L'Hérit., Sert. Angl., p. 17, t. 18 (1788)

Perianth persistent; tube very short; segments subequal, 1-nerved, spreading. *Stamens* attached above the base of the perianth-segments; filaments deltoid at the base; anthers versatile, dehiscing introrsely. *Ovary* sessile, subglobose, with many ovules in each chamber; style cylindric; stigma capitate or minutely tricuspidate. *Fruit* membranous, loculicidally 3-valved. *Seed* black or brown, obovoid, not compressed; embryo nearly as long as the horny endosperm.

Underground stem a large tunicated bulb; leaves multifarious; inflorescence a raceme, crowned with a coma of empty leafy bracts; peduncle cylindric or clavate; flowers greenish, sometimes tinged with blue.

An African genus of 14 species, one of which is found in tropical Africa, the remainder in South Africa and found mainly in the eastern districts of the Cape Province and the Orange Free State; 1 species recorded from the Riversdale and Humansdorp districts and a few occur in the central districts. (Type: *E. regia* (L.) L'Hérit.)

1089 44. ORNITHOGALUM Linn., Sp. Pl., ed. 1, p. 306 (1753)

Perianth persistent; tube 0; segments subequal, spreading, with or without a distinct few-nerved keel. *Stamens* hypogynous; filaments usually more or less flattened, often unequal; anthers versatile, dehiscing introrsely. *Ovary* sessile, with many ovules in each chamber; style short or elongated; stigma capitate. *Fruit* membranous, loculicidally 3-valved. *Seed* black, globose or angled by pressure; endosperm firm; embryo short.

Underground stem a tunicated bulb; leaves all radical; inflorescence a raceme or corymb; peduncle naked; bracts scarious, persistent; flowers white or yellow, never blue or mauve-purple.

Described species about 245, widely spread in the Old World; 120 species recorded from South Africa, widely distributed. (Type: *O. umbellatum* Linn.)

1090 45. DRIMIOPSIS Lindl. et Paxt. Flow. Gard., vol. 2, p. 73, t. 172 (1851—52)

Perianth persistent; tube 0; segments 1-nerved; the 3 inner segments cucullate at the tip. *Stamens* inserted at the base of the perianth-segments; filaments dilated at the base; anthers versatile, dehiscent introrsely. *Ovary* sessile, globose, 3-angled, with 2 ovules in each chamber; style cylindric; stigma capitate. *Fruit* membranous, globose, loculicidally 3-valved. *Seeds* 1—2 in each loculus, tergid.

Underground stem a tunicated bulb; leaves usually fleshy and flaccid, petioled or sessile; inflorescence a dense subspicate raceme; peduncle naked; bracts obsolete.

An African genus of 22 species; 9 species occur in South Africa, extending from Natal to the East London district; also recorded from Namaqualand and the Transvaal. (Type: *D. maculata* Lindl.)

1093 46. HYACINTHUS Linn., Sp. Pl., ed. 1, p. 316 (1753)

Perianth-tube campanulate or oblong; segments subequal, falcate, as long as or longer than the tube. *Stamens* inserted at or below the throat of the perianth-tube; filaments filiform; anthers versatile, dehiscent introrsely. *Ovary* ovoid, sessile, with 2—6 ovules in each chamber; style cylindric; stigma capitate. *Fruit* membranous, loculicidally 3-valved. *Seed* black, globose; embryo cylindric; much shorter than the horny endosperm.

Underground stem a bulb with membranous tunics; leaves all radical, fleshy; inflorescence a raceme; bracts small, membranous.

Described species about 75, though possibly several belong to other genera, nearly all of the Oriental and Mediterranean regions; 2 species found in the southwestern districts of the Cape Province. (Type: *H. orientalis* Linn.)

1094 47. PSEUDOGALTONIA O. Kuntze, Jahrb. Bot. Gart. Berlin, vol. 4, p. 274 (1886)

Perianth subsistent; tube green, white above, cylindric, slightly curved, slightly swollen at the base; lobes shorter than the tube, oblong, obtuse. *Stamens* in 1 row, inserted in the throat of the perianth-tube; filaments flat, narrowing towards the apex; anthers shorter than the filaments. *Ovary* bluntly 3-angled, with many ovules in each loculus; style terete, scarcely exceeding the perianth; stigma simple. *Fruit* membranous, oblong in outline. *Seed* black, compressed, somewhat winged; endosperm firm.

Underground stem a bulb, with the scales breaking up into long coarse fibres; leaves several, ovate-lanceolate; peduncle longer than the leaves, terete; inflorescence a raceme; bracts linear, acuminate; pedicels about twice as long as the bracts, articulated at the apex.

Endemic; species 1, found in Namaqualand and South West Africa. (Type: *P. clavata* (Masters ex Baker) Phillips=*P. pechuelii* O. Kuntze=*Galtonia clavata* Bkr. of *Flora Capensis*)

1097 48. VELTHEIMIA Gleditsch in Mém. Acad. Berlin, p. 66 (1769)

Perianth-tube long, cylindric; segments ovate, much shorter than the tube. *Stamens* inserted at the middle of the perianth-tube; filaments filiform; anthers dorsifixed, dehiscent introrsely. *Ovary* sessile, oblong in outline, with 2 ovules in each chamber; style filiform; stigma capitate. *Fruit* membranous, large, turbinate, acutely 3-angled, loculicidally 3-valved. *Seed* black, turbinate; endosperm horny.

Underground stem a large bulb with membranous tunics; leaves all radical; inflorescence a dense raceme; peduncle naked; bracts membranous, lanceolate-acuminate.

Endemic; species 6, extending from Little Namaqualand to Kaffraria.

1098 **49. LACHENALIA** Jacq. in *Nova Acta Helvet.*, vol. 1, p. 39 (1787)

Perianth persistent; tube campanulate; segments unequal; the 3 outer segments slightly gibbous near the apex; the 3 inner segments usually longer, spathulate, spreading upwards. *Stamens* inserted on the perianth-tube; filaments filiform; anthers versatile, dehiscent introrsely. *Ovary* ovoid, with many ovules in each chamber; style long, slender; stigma capitate. *Fruit* membranous or subcoriaceous, obovoid, 3-angled, loculicidally 3-valved. *Seed* black, turgid; endosperm moderately firm.

Underground stem a tunicated bulb; leaves usually 2, clasping at the base of the peduncle, often spotted; inflorescence a raceme or spike; peduncle leafless; bracts persistent.

Endemic; species 65, mostly in the south-western district of the Cape Province; a few species extend into Namaqualand, the Albany district, the Transkei and central districts.

NOTE.—Linnaeus in *Syst. Veg.*, ed. 14, p. 314 (1784), and Jacquin in above publication both mention a species *L. tricolor*. Baker in the *Flora Capensis*, vol. 6, does record such a species.—E. P. P.

1099 **50. POLYXENA** Kunth, *Enum. Pl.*, vol. 4, p. 294 (1843)

Perianth persistent; tube cylindric or infundibuliform; segments equal, shorter than the tube. *Stamens* in 2 series at the throat of the perianth-tube; filaments filiform, free or connate at the base; anthers dorsifixed, versatile, dehiscent introrsely. *Ovary* sessile, flask-shaped, with many ovules in each chamber; style subulate; stigma capitate. *Fruit* membranous, loculicidally 3-valved. *Seed* small, black, shining, globose; endosperm firm in texture.

Underground stem a tunicated bulb; leaves 2, usually erect; inflorescence a corymb; bracts not in an involucre.

Endemic; species 10, mainly in the central districts; also found in Namaqualand and in the Worcester, Uniondale, and Uitenhage districts. (Type: *P. pygmaea* Kunth)

NOTE.—This genus comprises the subgenus *Eupolyxena* of the *Flora Capensis*.—E. P. P.

1099a **51. NEOBAKERIA** Schltr., *Notizbl. Bot. Gart. Mus. Berlin-Dahlem*, vol. 9, p. 150 (1924)

Perianth deeply 6-fid; tube cylindric; segments narrowly elliptic, somewhat obtuse or acute, usually narrowed at the base. *Stamens* in 1 row in the perianth-throat; filaments dilated and shortly connate at the base, commonly much exceeding the perianth-segments; anthers oval. *Ovary* ovoid, with 4—6 ovules in 2 rows in each chamber.

Dwarf perennials; bulb ovoid or subglobose; leaves 2, erect-spreading or more or less flat on the ground, elliptic or ovate, subfleshy, glabrous; inflorescence a shortly peduncled raceme, sometimes cylindric, sometimes head-like; involucre absent; flowers white or pink; bracts slender, much shorter than the flowers.

Endemic; species 8, found in South West Africa, the Orange Free State, and the central districts. (Type: *N. angustifolia*. (L. fil.) Schltr.)

NOTE.—This genus comprises the subgenus *Astemma* of *Polyxena* of the *Flora Capensis*.—E. P. P.

1100 **52. WHITEHEADIA** Harv., *Gen. S. Afr. Pl.*, ed. 2, p. 396 (1868)

Perianth persistent; tube very short; segments subequal, spreading, 3—5-nerved, longer than the tube. *Stamens* inserted in the throat of the perianth-tube; filaments connate at the base; anthers dorsifixed, versatile, dehiscent introrsely. *Ovary* sessile, globose, with many ovules in each chamber; style

subulate; stigma capitate. *Fruit* membranous, subglobose, acutely 3-angled, loculicidally 3-valved. *Seed* black, shining, flask-shaped; endosperm cartilaginous.

Underground stem a tunicated bulb; leaves 2; inflorescence a dense subspicate raceme; bracts round, cuspidate.

Endemic; species 1, recorded from Namaqualand and south of Graaff-Reinet. (Type: *W. latifolia* Harv.)

1100a **53. NEOPATERSONIA** Schönl., Rec. Albany Mus., vol. 2, p. 251 (1912)

Perianth-tube short; segments subequal, spreading. *Stamens* sub-1-seriate, attached to the throat of the perianth; filaments broadened and connate at the base, gradually narrowed above; anthers dorsifixed, with introrse dehiscence. *Ovary* sessile, subovoid, 3-furrowed, with many ovules in each chamber; style filiform; stigma of 3 very short spreading branches. *Fruit* membranous, 3-grooved, with loculicidal dehiscence. *Seeds* numerous, flask-shaped, rough.

Underground stem a tunicated bulb; leaves linear, erect; inflorescence a lax raceme.

Endemic; species 1, recorded only from the Knysna and Uitenhage districts. (Type: *N. uitenhagensis* Schönl.)

1101 **54. MASSONIA** Thunb. ex Linn. f. Suppl., pp. 27 et 193 (1781)

Perianth-tube cylindric; segments subequal, spreading or reflexed. *Stamens* inserted in the perianth-throat; filaments united into a cup at the base; anthers dorsifixed, dehiscing introrsely. *Ovary* sessile, with many ovules in each chamber; style cylindric; stigma capitate. *Fruit* membranous, obovate, 3-angled, loculicidally 3-valved. *Seed* black, globose; endosperm moderately firm in texture.

Underground stem a tunicated bulb; leaves 2, broad; inflorescence a sessile or subsessile globose head, surrounded by a number of imbricated bracts; pedicels short, not articulated.

Endemic; species 45, found mainly in the central districts but also recorded from Namaqualand to the Uitenhage district. (Type: *M. latifolia* Linn. f.)

1101a **55. ANDROSIPHON** Schltr., Notizbl. Bot. Gart. Berlin-Dahlem, vol. 9, p. 147 (1924)

(*Amphisiphon* Barker)

Perianth deeply 6-fid or shortly 6-toothed; tube somewhat elongated, longer or shorter than the lobes; segments narrowly oblong, obtuse, erect-spreading, or short and erect. *Stamens* twice or almost twice as long as the perianth; filaments united into a column as long as the perianth, with the free portion of the filament subulate, glabrous; anthers oblong, obtuse, dorsifixed. *Ovary* oblong in outline, with 8—10 or more ovules in 2 rows in each chamber; style erect, subulate, simple, a little longer than the stamens. *Capsule* ovoid or more or less oblong in outline. *Seeds* black, shining, many.

Dwarf herbs with the habit of *Massonia*; underground stem a bulb; leaves 2, basal, broadly elliptic or ovate; inflorescence shortened, head-like, congested, many or few flowered, without an involucre; bracts erect spreading, lanceolate, acute.

Endemic; species 2, recorded from the Ceres and Calvinia districts. (Type: *A. capensis* Schltr.)

NOTE.—The above is an amended description. The genera *Massonia*, *Polyxena*, *Neobakeria*, *Whiteheadia*, *Neopatersonia*, *Androsiphon*, *Amphisiphon* would repay careful re-examination. All agree in having connate stamens and it is probable that further study would reduce the species to one or two well-defined genera.—E. P. P.

1102 56. DAUBENYA Lindl., Bot. Reg., t. 1813 (1835)

Flowers, especially the outer ones, prominently bilabiate; tube cylindric; segments unequal. *Stamens* inserted at different heights near the base of the perianth-segments; filaments short, filiform; anthers dorsifixed, dehiscent introrsely. *Ovary* sessile, with several ovules in each ovary chamber; style cylindric; stigma capitate.

Underground stem a tunicated bulb; leaves 2; inflorescence a sessile or subsessile head.

Endemic; species 1, only recorded from the Calvinia district. (Type: *D. aurea* Lindl.)

NOTE.—In *Flowering Plants of South Africa*, vol. 2, pl. 71 (1922), the three described species are reduced to one.—E. P. P.

1109 57. DRACAENA Vand. apud Linn., Mant., vol. 1, p. 9 (1767)

Perianth divided into 6 segments nearly to the base, without an evident tube except such as is formed by the overlapping margins of the segments. *Stamens* inserted high up on the perianth-segments; filaments filiform or slightly flattened, thickened at the middle; anthers dorsifixed, versatile, dehiscent introrsely. *Ovary* sessile, ovoid, with a single ovule in each chamber; style filiform; stigma capitate, sometimes slightly 3-lobed. *Fruit* a globose berry. *Seeds* often 1—2 by abortion, globose or angled by pressure, with the testa often pulpy; endosperm horny; embryo small.

Trees or shrubs; stems simple or branched; leaves thick and rigid or subfleshy, stiffly coriaceous or thin and flexible, sessile or petioled, ensiform or elliptic; inflorescence a panicle, with the flowers clustered at the nodes; pedicels articulated at the apex.

Species described 168, spread throughout the tropical and subtropical zones of the Old World; 2 species in South Africa, one of which extends from Natal to the Uitenhage district; the other recorded from the Transvaal.

1110 58. SANSEVIERIA Thunb., Prodr. Pl. Cap., p. 65 (1794)

(*Acynta* Med.)

Perianth-tube cylindric; segments subequal, spreading. *Stamens* inserted in the throat of the perianth-tube; filaments filiform; anthers versatile. *Ovary* with a single ovule in each chamber; style filiform; stigma capitate. *Fruit* a berry. *Seeds* 1—3, globose, fleshy.

Caulescent or acaulescent plants, rootstock a creeping rhizome; leaves cylindric, laterally compressed, half-cylindric, or flat, fleshy or fleshily coriaceous, rigid, firm or flexible, without or with a very inconspicuous midrib beneath; inflorescence a dense cylindric raceme or panicle, peduncle elongated with only a few scarious bracts; pedicels articulated, usually fascicled.

Species about 60, chiefly confined to Africa, the neighbouring islands, and Arabia; 6 species recorded from South Africa, extending from the Transvaal and Natal to the Uitenhage and Humansdorp districts; also recorded from the central districts and South West Africa. (Type: *S. thyrsiflora* Thunb.)

1113 59. ASPARAGUS Linn., Sp. Pl., ed. 1, p. 313 (1753)

Perianth-tube 0; segments subequal, spreading. *Stamens* inserted at the base of the perianth-segments; filaments filiform or slightly flattened; anthers dorsifixed, versatile, dehiscent introrsely. *Ovary* sessile, globose, with 2 or few ovules in each chamber; style filiform; stigma tricuspidate. *Fruit* a globose berry. *Seeds* black, often solitary, globose or angled by pressure; endosperm horny.

Stems erect or scandent, often woody; leaves small, scarious, often produced into spines at the base; branches in the form of cladodia, solitary or fascicled in the axils of the leaves, usually subterete, rarely flattened; flowers usually axillary, rarely racemose; pedicels articulated.

Species about 256, spread through the temperate and tropical regions of the Old World, 68 species described from South Africa, widely distributed. (Type: *A. officinalis* Linn.)

1147 **60. BEHNIA** Didrichsen in Kjoebenhavn Vid. Meddel., p. 182 (1854)

Perianth-tube funnel-shaped; segments subequal, spreading, as long as the tube. *Stamens* inserted at the middle of the perianth-tube; filaments short and thick; anthers dorsifixed, versatile, dehiscent introrsely. *Ovary* contracted at the base into a short gynophore, with few ovules in each chamber; style short; stigmas 3, spreading. *Fruit* a globose berry. *Seed* black, subglobose, endosperm horny.

Stem slender, woody, copiously branched; leaves alternate, ovate, distinctly veined; inflorescence a simple or slightly compound cyme from the axils of the upper leaves; pedicels articulated at the apex; bracts persistent, scarious, ovate-lanceolate.

Endemic; species 1, extending from the northern Transvaal and Natal to the Uitenhage district; also found in the Somerset East district. (Type: *B. reticulata* (Thunb.) Didrichs.)

1151 **61. SMILAX** Linn., Sp. Pl., ed. 1, p. 1028 (1753)

Plants dioecious. *Perianth-tube* 0; segments distinct, subequal. *Male flowers*:—*Stamens* inserted at the base of the perianth-segments; filaments filiform; anthers erect, dehiscent introrsely. *Ovary* 0. *Female flowers*:—*Staminodes* filiform. *Ovary* sessile, ovoid, with 1—2 ovules in each chamber; style 0 or short; stigmas 3. *Fruit* a globose berry. *Seeds* 1—2 by abortion, globose; endosperm horny; embryo minute.

Rootstock often large; stems usually woody, often prickly; leaves alternate, with a pair of spiral tendrils at the base of the petiole; inflorescence a small umbel.

Species nearly 300, cosmopolitan; 1 species in South Africa, recorded from the northern Transvaal and Natal. (Type: *S. aspera* Linn.)

26. HAEMODORACEAE

Flowers usually yellow, bisexual, regular or very slightly zygomorphic. *Perianth* persistent; tube short or fairly long or 0; lobes or segments 6, in 1 or 2 whorls. *Stamens* 3 or rarely 6; filaments free; anthers 2-theous, basifixed or versatile, opening by slits lengthwise. *Ovary* superior or inferior, 3-chambered (rarely 1—2 chambers sterile), with 1 to numerous ovules in each chamber; style simple; stigma capitate, minute or stigmas 3. *Fruit* a loculicidal capsule. *Seeds* numerous to solitary in each loculus; embryo small; endosperm abundant.

Herbs, with a woody or tuberous rootstock or underground stem a corm; leaves 2-ranked, radical, linear or ensiform, sheathing at the base; inflorescence a panicle, raceme, or cyme, sometimes the cymes subumbellate, often densely villous with plumose hairs, rarely flowers solitary.

Genera 10, with about 40 species; natives of Australia, North and South America, and South Africa.

1. Ovary superior, 3-chambered or with only 1 chamber developed and
1—2 chambers small and empty; ovule solitary 2

Ovary inferior, 3-chambered; ovules many or ovule solitary in each chamber 3

2. Ovary 3-chambered; inflorescence a panicle 3. **Wachendorfia** Linn.
Ovary with 1 fertile chamber; inflorescence a raceme

1. **Barberetta** Harv.

3. Ovule solitary in each chamber; inflorescence a panicle

2. **Dilatrís** Berg.

Ovules many in each chamber; flowers solitary

4. **Pauridia** Harv.

NOTE.—J. Hutchinson, *Families of Flowering Plants (Monocotyledons)*, mentions that Pax in both editions of *Engler's Pflanzenfamilien* limited the family to Bentham & Hooker's tribe *Euhaemodoreae* and transferred their tribe *Conostyleae* to the *Amaryllidaceae*, but with that he does not agree.—E. P. P.

1158 1. BARBERETTA Harv., Gen. S. Afr. Pl., ed. 2, p. 377 (1868)

Perianth funnel-shaped; tube 0; segments equal, 3—5-nerved. *Stamens* 3, attached to the base of the outer segments, exerted; filaments filiform. *Ovary* superior, oblique, with 1 perfect chamber containing a single ovule and with 1—2 empty chambers; style lateral on the ovary, linear, longer than the perianth; stigma minute.

Rootstock tuberous; leaves flaccid, with very distinct vertical ribs; inflorescence a lax raceme; flowers bright orange; bracts shorter than the slender pedicels.

Endemic; species 1, extending from Tembuland to Natal. (Type: *B. aurea* Harv.)

1160 2. DILATRIS Berg., Deser. Pl. Cap., p. 9, t. 3, fig. 5 (1767)

Perianth divided to the base; segments subequal. *Stamens* 3, attached to the base of the inner segments. *Ovary* inferior, globose, 3-chambered, with a solitary ovule in each chamber; stigma minute. *Capsule* globose, hairy, indehiscent or finally dehiscent longitudinally. *Seeds* discoid.

Rootstock short, woody; leaves several in a distichous basal rosette; peduncle hairy, elongated, with a few reduced leaves; inflorescence a short congested panicle.

Endemic; species 2, extending from the Cape Peninsula to the Riversdale district. (Type: *D. corymbosa* Berg.)

1162 3. WACHENDORFIA Burm., *Wachendorfia* (1757) et Linn., Syst., ed. 10, p. 864 (1759)

Perianth rather oblique, funnel-shaped; segments subequal; the 3 outer segments firmer than the inner, hairy without; the 3 inner segments shortly joined and sometimes obscurely spurred at the base. *Stamens* 3, opposite the inner segments, included, declinate; anthers ovate-sagittate. *Ovary* superior, 3-chambered, with a single ovule in each chamber; style declinate; stigma capitate. *Capsule* acutely 3-lobed, dehiscent loculicidally.

Roots tuberous, usually of a reddish colour; leaves lanceolate, plicate; inflorescence a panicle; flowers usually yellow.

Endemic; species 2, ranging from the Malmesbury to the Uitenhage district.

1165 4. PAURIDIA Harv., Gen. S. Afr. Pl., p. 341 (1838)

Perianth with a short tube above the ovary; segments subequal, spreading. *Stamens* 3, inserted on the perianth-tube opposite the inner segments. *Ovary* inferior, clavate, 3-chambered, with many ovules in each chamber; style short; stigmas 3, subulate, falcate, sometimes 1 or 2 abortive or the

whole style abortive and the flowers then male. *Capsule* membranous, obconic, crowned with the faded perianth. *Seeds* many, globose, minute.

Corm globose, with a ring of bristles at the top; leaves linear; peduncles several to a corm, 1-flowered; perianth-segments yellow, tipped with green.

Endemic; species 1, extending from the Cape Peninsula to the Riversdale district. (Type: *P. hypoxidoides* Harv.)

27. AMARYLLIDACEAE

Flowers bisexual, regular or nearly so. *Perianth* corolline; tube long-cylindric, or short, or 0, rarely with a glandular ring in the throat; segments 6, in 2 series, shorter or longer than the tube. *Stamens* usually 6, rarely 3 or 12 or 18, usually in 1 series, less commonly in 2 series; filaments free or sometimes united at the base, filiform, erect, rarely declinate or connivent in a cone; anthers dorsi- or basi-fixed, dehiscing by longitudinal slits, rarely by terminal pores. *Ovary* inferior, rarely half-inferior, 3-chambered, with 1 to many ovules in each chamber; style simple; stigma capitate or tricuspidate, rarely with 3 distinct branches. *Fruit* usually a 3-valved capsule, more rarely a berry. *Seeds* few or many, bulbiform or angled, rarely winged; endosperm fleshy; embryo small, central.

Usually acaulescent herbs; underground stem a bulb or corm; leaves radical; inflorescence an umbel or raceme, rarely a head or the flowers solitary; spathe-valves usually 2, sometimes numerous and coloured.

Genera about 70, species about 700, spread widely in the temperate and tropical regions of both hemispheres.

- | | | | |
|---|----------------------------|---------------------------|-----|
| 1. Involucral-bracts many, green or bright red; fruit a berry... | ... | ... | 2 |
| Involucral-bracts usually 2, sometimes only 1; fruit a capsule, rarely succulent, very rarely a berry but then fruit beneath the ground | ... | ... | 3 |
| 2. Involucral-bracts somewhat fleshy, bright red; ovules 2 in each ovary-chamber | ... | ... | ... |
| Involucral-bracts membranous, green; ovules more than 2 in each ovary-chamber | ... | ... | ... |
| 3. Style 3-angled in the lower half | ... | 5. <i>Strumaria</i> Jacq. | ... |
| Style terete | ... | ... | 4 |
| 4. Anthers unequal or connivent in a cone, dehiscing by apical pores | ... | ... | 5 |
| Anthers all alike, dehiscing by apical slits | ... | ... | 6 |
| 5. Stamens connivent in a cone | ... | 23. <i>Walleria</i> Kirk | ... |
| Stamens unequal, one or more distinctly declinate | ... | 24. <i>Cyanella</i> Linn. | ... |
| 6. Inflorescence a densely woolly panicle; ovary half-inferior | ... | 25. <i>Lanaria</i> Ait. | ... |
| Inflorescence an umbel, raceme, or flowers solitary; ovary inferior | ... | ... | 7 |
| 7. Perianth with a glandular ring in the throat or the filaments united into a conspicuous cup | ... | ... | 8 |
| Perianth without a glandular ring or cup in the throat | ... | ... | 10 |
| 8. Flowers solitary without a visible peduncle | 12. <i>Klingia</i> Schönl. | ... | ... |
| Flowers in an umbel at the end of a well-developed peduncle | ... | ... | 9 |
| 9. Flowers red; perianth with a glandular ring in the throat | 9. <i>Vallota</i> Herb. | ... | ... |

Flowers white; filaments united in a conspicuous cup

18. *Pancratium* Linn.

- | | |
|--|--|
| 10. Inflorescence a raceme, rarely a head or flowers solitary | 11 |
| Inflorescence an umbel | 19 |
| 11. Perianth-tube 0 or very short; segments much longer than the tube ... | 12 |
| Perianth-tube slender or funnel-shaped; segments shorter than the tube,
rarely of the same length | 15 |
| 12. Filaments adnate to the back of the anthers | 13 |
| Anthers basifixed | 14 |
| 13. Ovary produced into a long, almost filiform, beak; bracts 0; fruit
succulent, indehiscent | 19. <i>Forbesia</i> Eckl. |
| Ovary without a beak; bracts foliaceous or setaceous; fruit a capsule | 21. <i>Spiloxene</i> Salisb. |
| 14. Perianth-tube short, subfunnel-shaped; flowers rosy, white rosy, or very
rarely white | 22. <i>Rhodohypoxis</i> Nel |
| Perianth-tube 0; flowers yellow, very rarely whitish yellow | 20. <i>Hypoxis</i> Linn. |
| 15. Stamens in 2 series | 16 |
| Stamens in 1 series, usually 6, sometimes 12 or 18 | 17 |
| 16. Ovary hidden down among the sheaths of the bulb-neck | 13. <i>Apodolirion</i> Bkr. |
| Ovary not hidden among the sheaths of the bulb-neck | 10. <i>Anoiganthus</i> Bkr. |
| 17. Anthers dorsifixed | 17. <i>Cyrtanthus</i> Ait. |
| Anthers basifixed | 18 |
| 18. Anthers twisting up spirally when the flower expands | 11. <i>Gethyllis</i> Linn. |
| Anthers not twisting spirally ... | 19. <i>Forbesia</i> Eckl. |
| 19. Stamens in 2 series | 20 |
| Stamens in 1 series | 21 |
| 20. Perianth-tube shorter than the segments | 10. <i>Anoiganthus</i> Bkr. |
| Perianth-tube much longer than the segments | 17. <i>Cyrtanthus</i> Ait. |
| 21. Anthers basifixed | 1. <i>Hessea</i> Herb. |
| Anthers dorsifixed | 22 |
| 22. Leaves distichous, biflabellately arranged, arching or spreading on the
ground, growing out again at the beginning of the new growth
period; all, but younger, with truncate apices | 23 |
| Leaves not biflabellately arranged, usually lasting through only one
growth-period; if growing out again at beginning of new growth-
period, then spirally arranged and sheathing at the base | 24 |
| 23. Flowers actinomorphic; perianth in line with the pedicel; stamens not
declinate | 15. <i>Amموcharis</i> Herb. |
| Flowers zygomorphic; perianth making an angle with the pedicel;
stamens declinate | 16. <i>Cybistetes</i> Milne-Redh. &
Schw. |
| 24. Flowers actinomorphic | 25 |
| Flowers zygomorphic | 26 |

25. Ovules 1—6 in each ovary-chamber; pedicels elongating in fruit
 3. *Boöphone* Herb.
 Ovules many in each ovary-chamber; pedicels not elongating in fruit
 14. *Crinum* Linn.
26. Pedicels elongating in fruit 8. *Brunsvigia* Heist.
 Pedicels not elongating in fruit 27
27. Ovules few in each ovary-chamber ... 6. *Nerine* Herb.
 Ovules many in each ovary-chamber 28
28. Perianth-tube long, narrowly cylindric 14. *Crinum* Linn.
 Perianth-tube very short 7. *Coburgia* Herb.

1166 **1. HESSEA** Herb., *Amaryll.*, p. 289, t. 29 (1837)

Perianth-tube 0 or very short; segments subequal, spreading, 3-nerved in the middle, longer than the tube. *Stamens* inserted at the base of the perianth-segments; filaments filiform or flattened towards the base, sometimes connate; anthers small, subglobose, basifixed. *Ovary* globose, with a few superposed ovules in each chamber; style subulate, tricuspidate at the apex. *Fruit* membranous, globose, loculicidally 3-valved. *Seeds* greenish, globose, 1—3 in each loculus.

Underground stem a bulb with membranous tunics; leaves generally produced after the flowers, filiform, linear, or lorate; inflorescence a few- or many-flowered umbel; pedicels elongate; spathe-valves 2, linear or lanceolate.

Endemic; species 17, extending from Namaqualand to Natal and the Transvaal, also found from the Graaff Reinet to Hopetown districts. (Type: *H. stellaris* (Jacq.) Herb.)

NOTE.—In *Journ. S. Afr. Bot.*, vol. 14, p. 81 (1948), it is suggested that the generic name *Hessee* Herb. should be replaced by *Periphanes* Salisb.—E. P. P.

1167 **2. HAEMANTHUS** Linn., *Sp. Pl.*, ed. 1, p. 325 (1753)

Perianth-tube short, subcylindric; segments equal, spreading or permanently ascending, longer than the tube. *Stamens* inserted in the throat of the perianth-tube; filaments filiform, often longer than the perianth-segments; anthers oblong, dorsifixed, versatile. *Ovary* globose, with the ovules solitary in each chamber or in collateral pairs; styles filiform, minutely tricuspidate at the apex. *Fruit* fleshy, globose, indehiscent. *Seed* black, shining, embedded in a shiny pulp and attached to a long shiny thread.

Underground stem a tunicated bulb; tunics fleshy; leaves 2, broad; inflorescence a dense capitate umbel; peduncle compressed, more or less spotted with purple; involucrel-bracts many, often fleshy and bright red, broadly ovate.

Species 90, mostly African; 1 species recorded from Socotra; 45 species found in South Africa, extending from Natal and the Transvaal, through the coastal belt to South West Africa; also recorded from the Graaff-Reinet district. (Type: *H. coccineus* Linn.)

1168 **3. BOÖPHONE** Herb., *App.*, 18 (1821)

(*Buphane* Herb.)

Flowers regular; perianth-tube short, campanulate or subcylindric; segments spreading, equal, longer than the tube. *Stamens* inserted in the throat of the perianth-tube; filaments filiform; anthers oblong, dorsifixed, versatile. *Ovary* turbinate, with 1—6 ovules in each chamber; style simple, obscurely 3-lobed at the stigmatose apex. *Fruit* dry, triquetrous, indehiscent or loculicidal. *Seed* globose, bulbiform.

Bulbs large (sometimes 1 ft. in diameter), tunicated; leaves not biflabellately arranged; inflorescence a dense umbel; peduncle stout; pedicels elongating in fruit; spathe-valves 2.

An African genus of 3—4 species; in South Africa the species are widely distributed. (Type: *B. disticha* (Linn. f.) Herb.)

NOTE.—Herbert, in *Botanical Magazine*, t. 1217 (1809), described the species under the name *Haemanthus toxicarius*.—E. P. P.

1170

4. *CLIVIA* Lindl., Bot. Reg., t. 1182 (1828)

Perianth-tube straight or curved; short, funnel-shaped; segments connivent, much longer than the tube; the 3 outer segments narrower than the 3 inner. *Stamens* inserted in the throat of the perianth-tube; filaments filiform, about as long as the segments; anthers oblong, dorsifixed, versatile. *Ovary* globose, with 5—6 ovules in each chamber; style long, slender, tricuspidate at the stigmatose apex. *Fruit* a bright red berry. *Seeds* one or few, globose, bulbiform.

Bulb imperfect, consisting only of the dilated bases of the leaves; root fibres very thick; leaves numerous, distichous, persistent; inflorescence a many-flowered umbel; peduncle stout; flowers reddish yellow; spathe-valves several, unequal, green, membranous, imbricated.

Endemic; species 3, extending from Bathurst into Natal and the Transvaal. (Type: *C. nobilis* Lindl.)

1171

5. *STRUMARIA* Jacq., Icon. Pl. Rar., vol. 2, p. 13, t. 356-60 (1790)

Perianth-tube 0; segments equal, spreading. *Stamens* inserted at the base of the perianth-segments; filaments filiform, usually connate and adnate to the style at the base; anthers oblong, dorsifixed, versatile. *Ovary* globose, with more than 2 ovules in each chamber; style swollen and 3-angled in the lower half, tricuspidate at the stigmatose apex. *Fruit* a globose membranous capsule, loculicidally 3-valved. *Seeds* one or few in each loculus, globose, bulbiform.

Underground stem a tunicated bulb; leaves lorate, with a collar-like sheath at the base; inflorescence an umbel; peduncle slender; spathe-valves 2, small, lanceolate.

Described species 8; 1 species doubtfully recorded from Chili; the remainder found in South Africa and extending from the Calvinia district into Namaqualand and South West Africa. (Type: *S. truncata* Jacq.)

1175

6. *NERINE* Herb., Bot. Mag., t. 2124 (1820)

Flowers zygomorphic; perianth-tube 0 or very short; segments narrowly oblanceolate, more or less crisped. *Stamens* unequal, inserted at the base of the perianth-segments; filaments filiform, suberect or declinate, sometimes appendiculate at the base; anthers oblong, dorsifixed, versatile. *Ovary* subglobose, 3-lobed, with few ovules in each chamber; style filiform, straight or declinate, obscurely tricuspidate at the stigmatose apex. *Fruit* membranous, subglobose, less than 1.5 cm. in diameter, with loculicidal dehiscence. *Seeds* one or few in each loculus, globose.

Bulb tunicated, not produced into a neck; leaves usually strap-shaped, sometimes filiform, produced with or after the flowers, not biflabellately arranged; inflorescence a few- or many-flowered umbel; peduncle slender or robust; pedicels not elongating in the fruit; spathe-valves 2, lanceolate.

Recorded species 31; 1 species found in Rhodesia, the remainder found from the Tulbagh district to Natal, the Transvaal, and the Orange Free State; also recorded from the central districts. (Type: *N. sarniensis* (Linn.) Herb.)

1176 **7. COBURGIA** Herb., Bot. Mag. Lond., vol. 47, p. 4, pl. 2113 (1819)

(*Amaryllis belladonna* of the Fl. Cap.)

Flowers zygomorphic; perianth-tube very short, funnel-shaped; segments broadly lanceolate, longer than the tube. *Stamens* inserted in the throat of the perianth-tube; filaments filiform, declinate; anthers linear, dorsifixed, versatile. *Ovary* oblong in outline, with many ovules in each chamber; style filiform; stigma capitate. *Fruit* subglobose, more than 1.5 cm. in diameter, with loculicidal dehiscence. *Seeds* few, globose, bulbiform.

Bulb with fibrous membranous tunics; leaves 7—9, produced after the flowers, distichous, not biflabellately arranged; inflorescence an umbel; peduncle compressed; spathe-valves 2, large, deltoid; pedicels not elongating in fruit.

Endemic; species 1, found from the Cape Peninsula to the Riversdale district. (Type: *C. rosea* (Lam.) Gouws)

NOTE.—There has been much controversy about the correct name of the Cape plant. Messrs. Traub and Moldenke (*Amaryllidaceae*, p. 66 (1949)) consider the correct name to be *Brunsvigia rosea* (Lam.) Hannibal. As this note was added after the typescript was prepared, I have retained the serial number 1176 as otherwise it would mean renumbering all the genera.—E. P. P.

1177 **8. BRUNSVIGIA** Heist., Descr. nov. gen. Brunsvig., p. III (1753)

Flowers zygomorphic; perianth-tube short or almost absent, often oblique; segments suberect or falcate, longer than the tube. *Stamens* inserted on the perianth-tube, more or less declinate; filaments filiform, unequal; anthers oblong, dorsifixed, versatile. *Ovary* turbinate, with many ovules in each chamber; style filiform, declinate; stigma capitate. *Fruit* dry, turbinate, sharply 3-angled, with loculicidal dehiscence. *Seed* subglobose, with a conspicuous funicle.

Bulb large, tunicated; leaves produced after the flowers, not biflabellately arranged; inflorescence an umbel; peduncle robust; spathe-valves 2; pedicels elongating in fruit.

Species 13; one found in tropical Africa, the remainder widely distributed in South Africa. (Type: *B. gigantea* Heist.)

1178 **9. VALLOTA** Herb., App. Bot. Reg., p. 29 (1821)

Perianth-tube funnel-shaped; segments equal, connivent, with a pulvinate callus at the base, equalling or longer than the tube. *Stamens* inserted on the upper part of the perianth-tube; filaments filiform; anthers oblong, dorsifixed, versatile. *Ovary* oblong in outline, with many ovules in each chamber; style filiform, obscurely tricuspidate at the stigmatose apex. *Fruit* ovate-oblong in outline, obtusely angled, loculicidally 3-valved. *Seed* black, compressed, produced into a wing at the base.

Bulb with brown membranous tunics; leaves 6—18, subdistichous; inflorescence an umbel; peduncle slightly compressed, hollow; spathe-valves 2.

Endemic; species 1, known only from the George, Knysna, Humansdorp, and Uniondale districts. (Type: *V. speciosa* (L. fil.) Dur. & Schinz = *V. purpurea* Herb.)

1179 **10. ANOIGANTHUS** Bkr., Journ. Bot., vol. 16, p. 76 (1878)

Perianth-tube short, funnel-shaped; segments subequal, ascending, longer than the tube. *Stamens* in 2 series; 3 inserted on the perianth-tube; 3 inserted in the perianth-throat; filaments filiform; anthers oblong, deeply sagittate, basifixed. *Ovary* oblong in outline, with many ovules in each chamber; style filiform; style-branches falcate, clavate. *Fruit* membranous, globose, loculicidally 3-valved. *Seeds* numerous, flat.

Bulb with a short neck and membranous tunics; leaves 3—4, contemporary with the flowers; inflorescence a 2—10-flowered umbel, rarely 1-flowered; spathe-valves 2.

Species 2; one in tropical Africa, the other extending from Natal, the Transvaal, and Swaziland to the East London district; also recorded from the Somerset East district. It is probable that a second species occurs in Natal. (Type: *A. breviflorus* Bkr.)

1186 11. GETHYLLIS Linn., Sp. Pl., ed. 1, p. 442 (1753)

Perianth-tube long, slender, cylindric; segments spreading, acute, shorter than the tube. *Stamens* 6, 12, 18, or more, inserted in the throat of the perianth-tube; filaments short, sometimes bearing 2—5 anthers; anthers linear, basifixed, twisting up spirally when the flower expands. *Ovary* hidden by the spathe and among the sheaths of the bulb-neck, with many ovules in each chamber; style long, filiform; stigma capitate. *Fruit* coloured, clavate, succulent, indehiscent, highly aromatic.

Bulbs usually with a neck; leaves generally contemporary with the fruit, produced after the flowers; flowers solitary, delicate, fugitive; spathe monophyllous, membranous, amplexicaul, clasping the ovary and the lower part of the perianth-tube.

Endemic; species 20, extending from Namaqualand to the Uitenhage district; also found in the Graaff Reinet district. (Type: *G. afra* Linn.)

1186a 12. KLINGIA Schönl., Rec. Albany Mus., vol. 3, p. 178 (1919)

Perianth-tube long, slender, scarcely dilated at the apex; segments in 2 series, subequal. *Stamens* inserted in the perianth-throat, much shorter than the perianth-segments; filaments of the 3 inner stamens widening at the base and adnate to the perianth, forming a corona-like disc; filaments of the 3 outer stamens broadly linear and inserted in the angles of the corona-like disc; free portion of filaments about as long as the broadened portion; anthers longer than the narrow portion of the filaments, linear, falcate. *Ovary* embedded deep down; style filiform, clavate above, with the thickened portion prismatic; stigma a 3-lobed disc. *Fruit* a clavate berry, many-seeded.

Underground stem a tunicated bulb; leaves numerous, narrowly linear, surrounded at the base by a collar-like sheath; flowers solitary.

Endemic; species 1, found in Namaqualand. (Type: *K. namaquensis* Schönl.)

1187 13. APODOLIRION Baker, Journ. Bot., vol. 16, p. 74 (1878)

Perianth-tube long, cylindric, usually very narrow, somewhat dilated above; segments subequal, ascending, very much shorter than the tube. *Stamens* in 2 series; 3 inserted in the throat of the perianth-tube; 3 inserted below the throat; filaments filiform; anthers linear, basifixed, about as long as the filaments. *Ovary* hidden down among the sheaths of the bulb-neck, with numerous ovules in each chamber; style filiform, obscurely lobed at the stigmatose apex. *Fruit* a many-seeded clavate berry.

Bulbs usually with a neck; leaves usually produced after the flowers, linear or lanceolate; flowers solitary.

Endemic; species 6, extending from the Swellendam district to Natal and the Transvaal; also recorded from the Graaff-Reinet district. (Type: *A. buchanani* (Bkr.) Bkr.)

1189 14. CRINUM Linn., Sp. Pl., ed. 1, p. 291 (1753)

Flowers regular or zygomorphic; *perianth-tube* long, narrowly cylindric, dilated above; segments linear to broadly lanceolate, about as long as the

tube. *Stamens* inserted in the throat of the perianth-tube; filaments filiform, declinate; anthers linear, dorsifixed, versatile. *Ovary* oblong in outline, with many ovules in each chamber; style filiform; stigma capitate. *Fruit* subglobose, more than 1.5 cm. in diameter, indehiscent or bursting irregularly.

Bulb large, tunicated; leaves linear or strap-shaped, not biflabellately arranged, not distichous or, if distichous, then the inner much narrower than the outer; inflorescence an umbel; pedicels not elongating in fruit; spathe-valves 2.

Species over 120, spread throughout the tropical and warm temperate regions of both the Old and New Worlds; 11 species in South Africa, extending from Namaqualand, through the coastal districts to Natal and the Transvaal; rare in the central districts. (Type: *C. americanum* Linn.)

1190 15. AMMOCHARIS Herb., App., p. 17 (1821), pro parte emend Milne-Redhead and Schweickerdt, Journ. Linn. Soc., vol. 52, p. 169 (1939)

Flowers regular; perianth-tube narrowly cylindric, more or less widened at the mouth, in a line with the pedicel; segments equal or the inner slightly shorter and narrower, much shorter (rarely longer) than the tube. *Stamens* shortly or far exserted, inserted in the mouth or near the mouth of the perianth-tube; filaments filiform, straight or more or less curved, not declinate; anthers linear-oblong, dorsifixed. *Ovary* obtusely angled, with 4—30 ovules in each chamber; style filiform; stigma minutely 3-sulcate. *Fruit* membranous, subglobose, indehiscent, at length bursting irregularly. *Seed* fleshy, subglobose or obtusely angled.

Bulb subglobose, tunicated; leaves falcate-ligulate or linear, distichous; flabellately arranged, arching or spreading on the ground; inflorescence a 1- to many-flowered umbel; spathe-valves 2, persistent, papery; pedicels not elongating or changing position in fruit.

An African genus of 5 species; 2 species found in South Africa, extending from the south-eastern coastal districts to Natal, Basutoland, the Orange Free State, and the Transvaal; also recorded from Namaqualand and South West Africa and a few central districts. (Type: *A. coranica* (Ker-Gawl) Herb.)

1190a 16. CYBISTETES Milne-Redhead and Schweickerdt in Journ. Linn. Soc., vol. 3, p. 190 (1939)

Flowers zygomorphic; perianth-tube subcylindric, slightly widening above, making an angle with the pedicel; segments subequal, much longer than the tube. *Stamens* fixed in the mouth of the perianth-tube; filaments filiform, much exserted, declinate; anthers linear-oblong, dorsifixed, versatile. *Ovary* obtusely angled, with 8—18 ovules in each chamber; style filiform, exserted, declinate; stigma entire, minutely 3-sulcate. *Fruit* dry, triquetrous, clavate, strongly ribbed, with the ribs persisting. *Seed* fleshy, subglobose or obtusely angled.

Bulb subglobose, tunicated; leaves falcate-ligulate, distichous, flabellately arranged, arching or spreading on the ground; inflorescence a 13—24-flowered umbel; spathe-valves 2, persistent; pedicels elongating and the outer spreading downwards in fruit.

A monotypic endemic genus found in the south-western districts of the Cape Province. (Type: *C. longifolia* (Linn.) Milne-Redhead & Schweickerdt)

1191 17. CYRTANTHUS Ait., Hort. Kew., ed. 1, vol. 1, p. 414 (1789)

Perianth-tube long, narrow, gradually dilated upwards; segments subequal, 2—3-times shorter than the tube. *Stamens* inserted on the perianth-tube, sometimes in 2 series; filaments filiform, sometimes very short; anthers oblong, dorsifixed, versatile. *Ovary* with many ovules in each chamber;

style long, filiform, indistinctly or distinctly 3-lobed at the stigmatose apex. *Fruit* oblong in outline, loculicidally 3-valved. *Seed* flattened.

Underground stem a tunicated bulb; leaves persistent, linear or strap-shaped; inflorescence an umbel of few or many flowers, rarely flower solitary; peduncle hollow; spathe-valves 2—4.

Species 47; 3 species found in tropical Africa; the remainder chiefly in the coastal belt from the Caledon district to Natal and the Transvaal. (Type: *C. augustifolius* (L.) Ait.)

1202 18. PANCRATIUM Linn., Sp. Pl., ed. 1, p. 290 (1753)

Perianth-tube cylindric, funnel-shaped at the apex; segments equal, spreading. *Stamens* inserted in the throat of the perianth-tube; filaments united into a conspicuous cup at the base; anthers linear versatile. *Ovary* with many ovules in each chamber; style long, filiform; stigma capitate, obscurely 3-lobed. *Fruit* a loculicidal capsule. *Seed* angled by pressure.

Underground stem a bulb; leaves linear or strap-shaped; inflorescence an umbel; peduncle solid; spathe-valves 2.

Species about 14, spread through the temperate and tropical regions of the Old World; 1 species recorded from Messina in the Transvaal. (Type: *P. zeylanicum* Linn.)

1229a 19. FORBESIA Eckl., Verz. Pflanzensamml., p. 4 (1827)

(*Curculigo* Gaertn. of the Fl. Cap.)

Perianth 6-partite; tube very short or none; segments subequal, spreading, lanceolate or suboblong, subacute. *Stamens* more or less equal, fixed to the base of the perianth-segments or in the throat of the perianth-tube; filaments short, subulate or filiform; anthers adnate to the filaments at the back, sagittate at the base, much longer than the filaments. *Ovary* cylindric, produced at the apex into a filiform beak, sessile or stalked, with many ovules in each chamber; style subulate; stigmas 3, usually shorter than the style. *Fruit* succulent, indehiscent. *Seed* black; subglobose; embryo small; endosperm fleshy.

Glabrous acaulescent herbs; rhizome or corm subdiscoid; leaves grass-like, radical, linear, acute, ribbed; flowers solitary, yellow.

Endemic; species 8, extending from South West Africa to Natal; also recorded from the Orange Free State. (Type: *F. plicata* (L. fil.) Eckl.)

1230 20. HYPOXIS Linn., Syst., ed. 10, p. 7 (1759)

(*Hypoxis* of Fl. Cap. partly)

Perianth-tube 0; segments unequal, persistent, spreading, usually hairy on the outer surface, very rarely glabrous; the outer segments narrower than the inner, linear or lanceolate, subacute or subobtuse; the inner segments suboblong or subovate, obtuse. *Stamens* unequal, with the inner shorter than the outer, rarely of the same length; filaments subulate or deltoid, sometimes filiform; anthers basifixed, linear or lanceolate, sagittate at the base. *Ovary* clavate or turbinate, rarely subglobose, densely hairy or subglabrous; with 4—20 ovules in 2 series in each chamber; style subulate or subfiliform, longer or shorter than the stigmas; stigmas 3, sometimes subsessile, usually free. *Capsule* with circumscissile dehiscence. *Seed* black or brownish-black, subglobose, warty or shining or spiny.

Acaulescent herbs, more or less villous, very rarely sparsely villous; tuber thick, small or large, often setose; leaves more or less villous, very rarely glabrous, subterete, linear, linear-lanceolate, ovate, or oblong-lanceolate, 2—40-nerved;

flowers solitary or 2-nate, or many arranged in subumbels or racemes, subsessile or pedicelled.

Species about 88, mostly African; 2 species found in the Malay Archipelago, Japan, and Formosa; a few species in North and South America; 41 species described from South Africa with a general distribution, but absent from the central districts except towards the east.

1230a **21. SPILOXENE** Salisb., Gen. Pl., p. 44 (1866)

(*Ianthe* Salisb., non *Janthe* Griseb.; *Hypoxis* of the Fl. Cap. partly)

Flowers regular; perianth-segments persistent, spreading, rarely distinct to the base; inner segments lanceolate, subacute, narrower than the outer; outer segments lanceolate or linear, subacute or submucronate. *Stamens* unequal, very rarely equal; filaments very often shorter than the anthers; anthers sagittate at the base, often split at the apex. *Ovary* clavate or turbinate or 3-angled or subcylindric, very rarely produced into a neck, with 20 to many, very rarely 2—4, ovules in 2-series in each chamber; style subulate, very rarely as large as the stigmas; stigmas 3, free or joined, subsessile, very rarely divided into 3 long branches. *Capsule* clavate, turbinate, or triquetrous, circumscissile below the neck. *Seed* black, small, globose or subglobose, densely warty.

Glabrous herbs; corm discoid, covered with lace-like or reticulated fibres or tuber fleshy, small or none; leaves 1—12, grass-like, fleshy, subrigid or membranous, subterete, linear, rarely ovate-lanceolate; flowers yellow or white, solitary or 2-nate, sometimes 3 arranged in a subumbel, pedicelled.

Endemic; species 20, extending from Namaqualand to the Albany district, mostly massed in the south-western districts of the Cape Province. (Type: *S. stellata* Salisb.)

1230b **22. RHODOHYPOXIS** Nel, Engl. Bot. Jahrb., vol. 51, p. 257 (1914)

Perianth 6-partite; tube short, subfunnel-shaped, densely pilose without; segments glabrous or subglabrous without, elliptic, oblong, or oval, clawed, obtuse or subacute. *Stamens* 6, affixed to the perianth-tube in 2 rows; filaments very short or none; anthers subsessile, minute, oblong, basifixed, produced into a subglobose gland. *Ovary* shortly turbinate, very rarely produced into a short beak or constricted at the neck; stigma minute, subsessile, subcapitate.

Tuber oblong in outline, covered with white bristles (the remains of old leaves); leaves radical, erect, sparsely covered with white stellate bristles on both sides, prominently 2-nerved; flowers rosy, rosy-white, very rarely white, solitary or 2-nate, long-pedicelled; pedicels densely covered with white stellate bristles; floral bracts solitary, setaceous, sometimes two opposite bracts above the middle of the scape.

Endemic; species 2, confined to East Griqualand, Natal, Basutoland, and the eastern Orange Free State. (Type: *R. baurii* (Bkr.) Nel)

1231 **23. WALLERIA** Kirk, Trans. Linn. Soc., vol 24, p. 497, t. 52, fig. 1 (1864)

Perianth-tube short, campanulate; segments equal, spreading, many-nerved, longer than the tube. *Stamens* inserted in the throat of the perianth-tube; filaments very short, filiform; anthers basifixed, lanceolate, connivent in a cone, dehiscing by apical pores. *Ovary* free, but included in the perianth-tube, globose, with many ovules in each chamber; styles subulate; stigmas capitate. *Fruit* globose, about the size of a pea.

Rootstock tuberous; leaves sessile, linear or oblong-lanceolate; flowers axillary, solitary, long-pedicelled; pedicels with a bract about the middle.

Species 3 or 5, or probably only varieties of one species; known from Angola, the Zambesi Highlands, and Madagascar; recorded from the Transvaal. (Type: *W. nutans* Kirk.)

1233 24. CYANELLA Linn., Sp. Pl., ed. 2, p. 443 (1762)

Perianth-tube 0; segments unequal, laxly nerved. *Stamens* inserted at the base of the segments, unequal; filaments short; anthers dehiscing by terminal pores. *Ovary* half-inferior, with numerous ovules in each chamber; style filiform; stigma minutely 3-lobed. *Fruit* a loculicidal capsule. *Seed* ovoid, turgid.

Underground stem a corm with matted fibrous tunics; leaves mostly in a basal rosette, terete or linear, persistent; inflorescence usually a raceme; bracts persistent.

Endemic; species 7, extending from Namaqualand to the Albany district; also recorded from Bechuanaland, Basutoland, and the Somerset East district. (Type: *C. capensis* Linn.)

1236 25. LANARIA Ait., Hort. Kew., vol. 1, p. 462 (1789)

Perianth-tube short; segments subequal. *Stamens* inserted in the throat of the perianth-tube; filaments filiform, shorter than the segments; anthers small, ovate, sagittate at the base. *Ovary* half inferior, with 2 ovules in each chamber; style filiform; stigma capitate. *Fruit* subglobose, crowned with the persistent perianth, 1-locular, 1-seeded. *Seed* globose.

Rootstock woody; leaves several in a basal rosette; inflorescence a dense panicle with scorpoid cymose branches, densely covered with plumose hairs.

Endemic; species 1, extending from the south-western districts of the Cape Province to the Albany district. (Type: *L. plumosa* Ait.)

28. VELLOZIACEAE

Flowers regular, bisexual. *Perianth* of 6 segments, cut to the top of the ovary or joined below to form a distinct tube. *Stamens* 6 or numerous and in 6 bundles of 2—6; anthers linear, basifixed, opening by longitudinal slits. *Ovary* inferior, 3-chambered, with many ovules in each chamber on projecting placentas; style simple; stigma capitate or of 3 short arms. *Fruit* a dry or hard capsule, often flat or concave on the top, crowned with the scar of the perianth, or 6-toothed, sometimes spiny, loculicidally dehiscent. *Seeds* black, numerous; endosperm copious, rather hard.

Stems woody and fibrous, simple or dichotomously branched, covered with the persistent bases of the fallen leaves; leaves crowded in a tuft at the end of the branches; flowers solitary or few between the fascicle of leaves.

Genera 2; species about 80, found in Africa, Madagascar, and Brazil.

1246 VELLOZIA Vand., Fl. Lusit. et Brazil Spec., p. 32, t. 2 (1788)

Perianth-segments cut down to the top of the ovary, otherwise with characters of the family.

Species over 50, found in Africa, Madagascar, and South America; 11, perhaps 12, species recorded in South Africa, found in Natal and the Transvaal; several of these extend into tropical Africa.

29. DIOSCOREACEAE

Plants dioecious, rarely monoecious or flowers bisexual. *Flowers* regular. *Perianth* 6-lobed or 6-partite; tube urn-shaped, campanulate, or almost none. *Stamens* 6, inserted in 1 row near the top of the perianth-tube or inserted at the base of the perianth-segments, sometimes only 3 or 3 perfect with 3 staminodes; filaments free or shortly connate; anthers 2-theous, with the thecae contiguous on a broad connective which is produced above the thecae into an elongated appendage with a spatulate horned apex or thecae separated; staminodes often present in the female flowers. *Ovary* inferior, 3-chambered, sometimes 3-winged, with 2 or many ovules in each chamber; styles 3, free or connate or style simple and 3-winged. *Fruit* a 3-valved capsule or berry, sometimes 3-winged, sometimes 1-seeded and indehiscent. *Seed* often winged, sometimes with a much-folded testa; endosperm present.

Tall climbers with tuberous roots or short rhizomes or a thick woody rootstock; leaves alternate or rarely opposite, cordate, sagittate, rounded or truncate at the base, entire or digitately divided; flowers solitary or paired, or in spikes or racemes or panicles.

Genera 10, with over 600 species, found in all warm regions.

NOTE.—J. Hutchinson, *Families of Flowering Plants (Monocotyledons)*, includes in the family only those genera with unisexual flowers.—E. P. P.

Stem not enlarged at the base above the ground

1. *Dioscorea* Linn.

Stem much enlarged and woody at the base above ground

2. *Testudinaria* Salisb.

1252 1. DIOSCOREA Linn., Sp. Pl., ed. 1, p. 1032 (1753)

Plants dioecious, rarely monoecious. *Male flowers*:—*Perianth* of 6 connate segments in 2 rows. *Stamens* sometimes 6, sometimes connate in a short column in the central flowers. *Ovary* rudimentary, thick, fleshy, or 0. *Female flowers*:—*Perianth* of 6 distinct segments. *Staminodes* 3—6, small or 0. *Ovary* 3-angled, 3-chambered, with 2 ovules in each chamber; styles 3, very short; stigmas entire or 2-fid. *Fruit* a 3-angled capsule, with the angles very prominent or almost winged. *Seed* much compressed, with a marginal wing or winged at the base only.

Stems not enlarged at the base above the ground, twining, high climbing or rarely procumbent; leaves alternate or sometimes opposite; inflorescence a spike, raceme, or panicle.

Described species over 400, but probably not all true species; 15 species recorded from South Africa, extending from Natal and the Transvaal to the Humansdorp, George, and Knysna districts. (Type: *D. bulbifera* Linn.)

1252a 2. TESTUDINARIA Salisb., ex Burch. Travels, vol. 2, p. 147 (1824)

Plants dioecious. *Male flowers*:—*Perianth* broadly campanulate, 6-fid. *Stamens* 6, inserted below the middle of the perianth; anthers small. *Style* rudimentary. *Female flowers*:—*Perianth-segments* small, distinct. *Staminodes* small. *Ovary* ovoid or oblong in outline, 3-chambered, with 2 ovules in each chamber; style very short; stigmas 3, bilobed. *Fruit* a 3-angled capsule, with the angles very prominent or almost winged. *Seed* compressed, with a broad apical wing.

Stems much enlarged and woody at the base above ground, with raised square areas; branches slender, twining, high climbers; leaves alternate; flowers small, in axillary racemes.

Endemic; species 3 or 4, extending from the Transvaal and Natal to the Humansdorp district; also recorded from the Graaff-Reinet and Somerset East districts. (Type: *T. elephantipes* Salisb.)

NOTE.—In a letter from the Royal Botanic Gardens, Kew, dated 21.9.50, the Director writes as follows: "The genus *Testudinaria* was originally reduced to *Dioscorea* by Uline in *Engl. Bot. Jahrb.*, 25, 157 (1898), followed by R. Kunth in *Engl. Pflanzenz.*, IV, 43, 321 (1924); *Engl. Pflanzenfam.*, ed. 2, 15a, 456 (1930). This reduction is maintained by Mr. I. H. Burkill in his present work on the genus *Dioscorea*."—E. P. P.

30. IRIDACEAE

Flowers bisexual, regular or irregular. *Perianth-tube* cylindric or funnel-shaped or abruptly dilated, more rarely 0; segments longer or shorter than the tube. *Stamens* 3, opposite the outer perianth-lobes, unilateral or equilateral; filaments short or elongated, straight or arcuate, sometimes flattened, free or connate; anthers 2-theous, dehiscent extrorsely or down the margin. *Ovary* inferior, very rarely superior (in a Tasmanian genus), almost invariably 3-chambered, usually with many superposed ovules in each chamber, rarely ovules 1—3; style-branches 3, filiform, subulate or flattened, sometimes petaloid, entire or bifid or more rarely the style minutely tricuspidate. *Fruit* a 3-locular capsule, with loculicidal dehiscence. *Seed* globose or angled or discoid, sometimes winged; endosperm horny; embryo minute.

Perennial herbs with the roots from underground rhizomes, corms, or bulbs; stems herbaceous, rarely subwoody; leaves narrow, sessile, firm in texture and persistent, often equitant and distichous, often in a basal rosette; inflorescence a simple or branched spike, corymb, or panicle; flowers one or more to each spathe, sometimes fugitive; spathe-valves green and herbaceous or brown or membranous, sometimes lacerated.

Genera about 73 with about 700 species, found in the temperate regions of both hemispheres. Over half of the known species occur in South Africa.

NOTE.—There has been a tendency for workers on the South African plants to unnecessarily multiply genera based largely on characters which are those of degree only.—E. P. P.

- | | | | | |
|--|----------------------------|-----|-----|----|
| 1. Stems tall and woody, with the remains of old leaves | ... | ... | ... | 2 |
| Stems not woody; often stemless plants | ... | ... | ... | 4 |
| 2. Flowers fugacious; perianth twisting spirally when the flowers fade | | | | |
| 13. <i>Nivenia</i> Vent. | | | | |
| Flowers not fugacious; perianth of faded flowers not twisted | ... | ... | ... | 3 |
| 3. Perianth-tube very short, almost 0; segments long and linear | | | | |
| 14. <i>Klattia</i> Bkr. | | | | |
| Perianth-tube much longer than the segments; segments ovate-lanceolate | 12. <i>Witsenia</i> Thunb. | | | |
| 4. Filaments connate, if free, then ovary produced into a long slender beak or style arms petaloid | | | | |
| Filaments free... | ... | ... | ... | 5 |
| | ... | ... | ... | 12 |
| 5. Style-branches simple or forked, filiform or flattened, but not petaloid | | | | |
| Style-branches petaloid | ... | ... | ... | 6 |
| | ... | ... | ... | 7 |
| 6. Style-branches forked | | | | |
| Style-branches simple | ... | ... | ... | 8 |
| 8. <i>Hexaglottis</i> Vent. | | | | |
| 18. <i>Ixia</i> Linn. | | | | |
| 7. Perianth-segments very much crisped; style-branches ciliate | | | | |
| 7. <i>Ferraria</i> Linn. | | | | |
| Perianth-segments not crisped | ... | ... | ... | 8 |

8. Perianth-tube cylindric; style-branches without a bilobed crest
 3. Galaxia Thunb.
 Perianth-tube 0 or very short; style-branches with a bilobed crest ... 9
9. Leaves laterally flattened (iris-like); rootstock stout, creeping and rooting, not bulbous; flowers iris-like, with the inner and outer segments dissimilar ... **5. Dietes** Salisb.
 Leaves flattened from above and channelled down the upper side or semi-terete or terete; rootstock a corm covered with fibres ... 10
10. Ovary a thin membranous capsule, sessile, concealed in the bracts of the flower clusters and produced into a long slender beak like a pedicel on which the flower is exerted; flowers iris-like
 6. Gynandiris Parlatores
 Ovary and the firm capsule more or less exerted from the flower-clusters on a long pedicel; capsule without or rarely with a very short beak ... 11
11. Lobes of the style-arms conspicuous, petaloid, as broad or broader than the transverse stigmas under their base; flowers iris-like, with the inner and outer perianth-segments dissimilar in colour and form or size; filaments free or more or less united into a sheath around the style ... **4. Moraea** Linn.
 Lobes of the style-arms reduced to short subulate points, narrower than the transverse or oblique stigmas under their base; outer and inner perianth-segments similar in form, size, and colour (except in 2 Cape species) ... **9. Homeria** Vent.
12. Style-branches bifid ... 13
 Style-branches entire, or style minutely tricuspidate, or style simple ... 18
13. Ovules 2—3 in each ovary-chamber... **38. Micranthus** Pers.
 Ovules many, superposed ... 14
14. Perianth-tube shorter than the segments ... 15
 Perianth-tube longer than the segments ... 16
15. Flowers solitary ... **2. Romulea** Maraitt
 Inflorescence a lax panicle of cymes... **39. Pillansia** L. Bolus
16. Perianth-tube subcylindric, slightly dilated upwards; stamens inserted in the throat of the perianth; filaments very short
 40. Lapeyrousia Pourr.
 Perianth-tube funnel-shaped; stamens inserted below the perianth-throat; filaments elongated ... 17
17. Inflorescence a simple or branched spike; spathe-valves moderately large, rigid, brown or herbaceous **41. Watsonia** Mill.
 Inflorescence a second spike with a flexuose rhachis; spathe-valves small, green, membranous above... **42. Freesia** Klatt
18. Spathes more than 1-flowered; flowers fugacious ... 19
 Spathes 1-flowered; flowers not fugacious ... 20
19. Perianth-tube 0; flowers yellow, not twisting spirally when faded; capsule not enclosed in the spathe **10. Bobartia** Ker
 Perianth-tube short; flowers blue, twisting spirally when faded; capsule enclosed in the spathe ... **11. Aristea** Soland
20. Style-branches long, as long or almost as long as the style... 21
 Style-branches very much shorter than the style ... 22

21. Plants with a short underground rhizome, not a corm
 Plants with corms ... *... ... **15. Schizostylis** Backh. & Harv.
17. Hesperantha Ker
22. Perianth-tube 0; segments very long, acuminate
21. Melasphaerula Ker
 Perianth-tube long or short; segments obtuse, acute, sometimes shortly
 acuminate 23
23. Spathe-valves lacerated 24
 Spathe-valves entire or emarginate 26
24. Stamens equilateral **20. Streptanthera** Sweet
 Stamens unilateral 25
25. Perianth irregular; segments shorter than the tube
25. Synnotia Sweet
 Perianth more or less regular; segments longer than the tube
23. Sparaxis Ker
26. Perianth-tube abruptly dilated 27
 Perianth-tube cylindric or funnel-shaped 32
27. Stem bearing one dense sessile lateral spike near its base and continued
 beyond it as a naked stem with some barren bracts or with 1 flower
 at its apex **32. Antholyza** Linn.
 Stem simple or branched, with the stem or branches ending in a lax or
 dense spike of flowers 28
28. Stem branched so that whole inflorescence is a panicle of spikes
34. Curtonus N. E. Br.
 Stem simple or branched, but whole inflorescence not paniculately
 arranged 29
29. Stem with 2—4 dense sessile lateral spikes and one terminal spike
33. Anaclanthe N. E. Br.
 Stem usually unbranched, sometimes branched in *Pentamenes* 30
30. Upper lobe of flower much longer than the other five, differently shaped
 and concave or hooded, with the stamens under the hood and about
 equalling or exceeding it **35. Pentamenes** Salisb.
 All the lobes of the flower either subequal and similar in form and flat,
 or unequal with the five lower gradually smaller but all similar in
 form and the upper one not hooded 31
31. Flower spike dense, 10—30-flowered; bracts hard, rigid, with the inner
 longer than the outer **36. Anapalina** N. E. Br.
 Flower spike lax, 1—7-flowered; bracts herbaceous, with the outer
 longer than the inner **37. Homoglossum** Salisb.
32. Stamens equilateral 33
 Stamens unilateral 36
33. Spathe-valves membranous, acuminate; inflorescence a lax panicle;
 grass-like plants **19. Dierama** C. Koch
 Spathe valves green or brown, not membranous and acuminate;
 inflorescence a simple or branched spike or flowers solitary 34
34. Flowers solitary, sessile in the centre of a rosette of leaves
1. Syringodea Hook. f.
 Inflorescence a branched or simple spike, rarely flowers solitary 35

1262 **3. GALAXIA** Thunb., Diss. Nov. Gen., vol. 2, p. 50, with plate (1782)

Perianth-tube cylindric; segments subequal. *Stamens* inserted in the throat of the perianth-tube, alternating with the style-branches; filaments connate; anthers sagittate. *Ovary* cylindric, with many ovules in each chamber; style filiform; style-branches petaloid, over-topping the anthers. *Capsule* membranous, cylindric. *Seed* minute.

Stemless plants; corm tunicated with parallel lamellae; leaves in a basal rosette; spathe 1-flowered; flowers very fugacious.

Endemic; species 6, recorded from the Clanwilliam to the Riversdale districts. (Type: *G. graminea* Thunb.)

1265 **4. MORAEA** Linn., Sp. Pl., ed. 2, p. 59 (1762)
(*Morea* Mill.)

Perianth-tube 0; segments unequal, more or less distinctly clawed; the 3 inner segments always smaller than the outer. *Stamens* opposite the style-branches and adpressed to them; filaments free or more or less united into a sheath round the style. *Ovary* obtuse or beaked, with many ovules in each chamber; lobes of the style-arms conspicuous, petaloid, as broad or broader than the transverse stigmas under their base. *Capsule* ovoid or ellipsoid, dehiscing loculicidally, not enclosed in the spathe. *Seed* ovoid or subglobose, often angled by pressure.

Underground stem a tunicated corm; leaves usually linear; spathes cylindric, more than 1-flowered; flowers fugacious.

Species about 90, found in Africa, Madagascar, and Australia; 61 species recorded from South Africa, fairly generally distributed, ranging from Namaqualand to Natal and the Transvaal; absent from the greater part of the central districts. (Type: *M. juncea* Linn.)

1265a **5. DIETES** Salisb., Trans. Hort. Soc., vol. 1, p. 307 (1812)

Perianth-segments free almost to the base, spreading from the base, with no distinct claw; the outer broader than the inner. *Stamens* connate. *Ovary* exserted from the flower clusters; style none or exceedingly short; style-branches very broad and petaloid, deeply 2-lobed at the apex; stigmas transverse, about half as broad as the lobes of the style-arms. *Fruit* exserted from the flower-clusters.

Rootstock a stout creeping rhizome; leaves 4—10 to a growth, in 2 ranks, laterally flattened, linear or sword-shaped and abruptly narrowed on the upper edge at the basal part; flower stem simple or branched, with 1 or more flower clusters.

Endemic; species 3, recorded from the George to the Komgha district; also found in Natal and the Transvaal. (Type: *D. iridifolia* Salisb.)

1265b **6. GYNANDRIRIS** Parlatore, Nuov. Gen. e Nuov. Sp. Pl. Monocot., p. 49 (1854)
(*Helixyra* Salisb. ex N.E. Br.)

Perianth-segments free almost to the base, with distinct claws, entire; the inner smaller than the outer. *Stamens* free. *Ovary* on a very short pedicel and included in the basal part of the flower-cluster, produced above into a very long and slender beak like a pedicel and bearing the exserted flower at its apex; style divided very deeply or nearly to its base into 3 linear or cuneate petaloid style-arms, with 2 acute lobes at the apex as broad or broader than

the (always?) bluntly conical stigmas under their bases. *Capsule* very thin and membranous, 3-locular. *Seeds* several in each loculus, somewhat angular from mutual pressure.

Rootstock a corm; leaves 1—2 to a stem, often very long, linear and flat or with curved edges or terete, sometimes spirally coiled; bracts thin, membranous when dried, with distinct veins or rarely apparently veinless.

Species about 13, mostly South African; 1 species recorded from the Mediterranean area. (Type: *G. sisyrinchium* Parl.)

1272 7. FERRARIA Linn., Sp. Pl., ed. 2, p. 1353 (1763)

Perianth-tube very short; segments subequal, clawed, spreading, much crisped on the margins. *Stamens* opposite the style-branches and adpressed to them; filaments connate or connivent in a cylindric tube. *Ovary* cylindric or more or less 3-angled, with numerous ovules; style filiform, inside the staminal-tube; style-branches petaloid, small, bifid, densely ciliate on the edges. *Capsule* membranous, ellipsoid, acute or beaked, not enclosed in the spathe. *Seed* globose, angled by pressure.

Underground stem a large tuber-like corm; leaves few, linear, distichous, passing gradually into ovate amplexicaul bracts; spathes cylindric, more than 1-flowered; flowers fugacious.

Species 22, natives of Africa and South America; 12 species found in South Africa, recorded from the Clanwilliam to the Uitenhage district; also recorded from the Victoria West district and from Namaqualand. (Type: *F. undulata* L.)

1273 8. HEXAGLOTTIS Vent., Dec. Gen. Nov., p. 6 (1808)

Perianth-tube 0; segments subequal, twisting up spirally when faded. *Stamens* opposite the style-branches; filaments very short, flattened, connivent in a tube. *Ovary* cylindric, with many ovules; style short; style-branches deeply forked into filiform segments. *Capsule* cylindric, not enclosed in the spathe. *Seed* minute.

Underground stem a small tunicated corm; produced leaves usually 2, linear or terete; inflorescence 3—4 to a spathe; flowers fugacious.

Endemic; species 3, ranging from the Clanwilliam to the Uitenhage district. (Type: *H. longifolia* Vent.)

1277 9. HOMERIA Vent., Dec. Gen. Nov., p. 6 (1808)

Perianth-tube 0 or very short; segments subequal or the three inner narrower, not or hardly clawed. *Filaments* connate into a tube; anthers sessile on the staminal-tube, opposite the style-branches, linear. *Ovary* clavate, with numerous ovules; lobes at end of each style-arm small, subulate, narrower than the transverse stigma at their base. *Capsule* splitting at the apex only, not enclosed in the spathe. *Seed* small, angled by pressure.

Underground stem a tunicated corm; leaf solitary, usually over-topping the stem; inflorescence corymbose, of one or few clusters of flowers; spathes cylindric; flowers fugacious.

Endemic; species 37, fairly generally distributed over the Union; recorded from the Caledon district to Natal and the Transvaal and also from the central and western districts and from Namaqualand. (Type: *H. collina* Vent.)

1284 10. BOBARTIA Salisb., Trans. Hort. Soc., vol. 1, p. 313 (1812)

Perianth-tube 0; segments equal, spreading. *Stamens* inserted at the base of the perianth-segments; filaments short, flattened; anthers sagittate. *Ovary* top-shaped, 3-angled, with numerous ovules; style short, 3-angled; style-

branches subulate, spreading. *Capsule* firm, splitting at the apex, not enclosed in the spathe.

Tufted plants with short stout rhizomes, very rarely with a corm; leaves rigid, terete or ensiform; inflorescence a head of 1 to several flowers, usually over-topped by a rigid bract; flowers more than one to a spathe, fugacious, pale yellow.

Endemic; species 17, mainly in the south-western districts of the Cape Province; also recorded from Natal. (Type: *B. juncea* Salisb. = *B. spathacea* (L.) Ker-Gawl.)

1295 11. ARISTEA Ait., Hort. Kew, vol. 1, p. 67 (1789)

(*Cleanthe* Salisb.)

Perianth-tube very short or almost none; segments blue or rarely white, obovate, cuneate, or oblong, equal or the inner larger or slightly smaller, twisting up spirally after flowering. *Stamens* with the filaments filiform or dilated at the base; anthers ovoid or oblong, rarely linear. *Ovary* oblong in outline or clavate; style filiform; style-branches narrow, slightly dilated and shortly lobed. *Capsule* rigid, loculicidally 3-valved. *Seed* small, globose or angled by pressure.

Herbaceous perennials, with a woody elongated or abbreviated rhizome; stems simple or branched; leaves in a distichous basal rosette; flowers solitary or 2-nate or many, fugacious; inflorescence a pseudo-umbel or a raceme; bracts often lacerated.

Species 49 of which number 6 are found in Madagascar, the remaining being African; 37 species described from South Africa, extending from the Transvaal and Natal to the Clanwilliam district. (Type: *A. africana* (L.) Hoffmns.)

1296 12. WITSENIA Thunb., Nov. Gen. Pl., vol. 2, p. 33, t. 17 (1782)

Perianth-tube long (2 inches), gradually dilated upwards, exerted from the spathe; segments connivent, ovate-lanceolate; the 3 outer segments pilose on the back. *Stamens* inserted in the throat of the perianth-tube; filaments flat; anthers lanceolate, sagittate. *Ovary* oblong in outline, crowned with an annular gland; style filiform, minutely tricuspidate at the apex. *Capsule* hard in texture, loculicidally 3-valved, enclosed in the spathe. *Seeds* few, angled.

Stem woody, branched; leaves distichous, ensiform; inflorescence a terminal head; involucre of closely imbricated rigid yellow glossy bracts; flowers yellow below, blue above, scented.

Endemic; species 1, recorded from the Caledon, Cape, and Swellendam districts. (Type: *W. maura* (L.) Thunb.)

1297 13. NIVENIA Vent., Dec. Gen. Nov., p. 5 (1808) non R. Br. (1810)

Perianth-tube distinct; lobes subequal, oblong; flowers falling entirely from the ovary as they fade. *Stamens* 3, included within or exerted from the tube; anthers dorsifixed. *Ovary* small, more or less obovoid and subtruncate at the top, with 8 ovules (in *N. corymbosa*) in each chamber. *Capsule* subglobose or oblong in outline, with 2 (or more?) seeds in each loculus. *Seed* (only seen in *N. corymbosa*) elongated, trigonous.

Perennial shrublets, with branching or rarely simple stems which become woody below; leaves laterally flattened, linear, acute, arranged in 2 ranks along the stem and branches and closely imbricating at the stem-clasping base; peduncle much flattened and acutely 2-edged; inflorescence a spike or corymb, with the corymbs sometimes arranged in an umbel; outer bracts 2, firm, entire, subequal; inner bract membranous, toothed or 2-lobed, usually much longer than the outer bracts.

Endemic; species 8, recorded from the Tulbagh, Caledon, Swellendam, and Riversdale districts and also from the Zwartberg Pass and Seven Weeks Poort. (Type: *N. capitata* (Klatt) Weimarck)

1298 14. KLATTIA Baker, Journ. Linn. Soc., vol. 16, p. 109 (1877)

Perianth-tube very short; segments equal, with a very long linear claw and a short narrow-lanceolate blade. *Stamens* inserted in the throat of the perianth-tube; filaments long, filiform; anthers sagittate at the base. *Ovary* turbinate, with few ovules in each chamber; style filiform, minutely tricuspidate at the apex. *Capsule* loculicidally 3-valved, enclosed in the spathe. *Seeds* 1 or few in each loculus, angular or compressed.

Stems woody, branched; leaves distichous, rigid; inflorescence a dense head; bracts large, lanceolate, rigid; spathes 1—2-flowered.

Endemic; species 2, found from the Caledon to the Riversdale district. (Type: *K. partita* Bkr.)

1299 15. SCHIZOSTYLIS Backh. et Harv. Bot. Mag., t. 5422 (1864)

Perianth-tube cylindric, long (1—1½ in.); segments oblong, acute. *Stamens* inserted in the throat of the perianth-tube; filaments filiform, longer than the anthers; anthers basifixed. *Ovary* clavate, with numerous ovules; style as long as the perianth-tube; style-branches spreading, subulate, almost as long as the style.

Underground stem a rhizome; leaves few, distichous, grass-like; inflorescence a lax equilateral spike; spathe-valves green, large, lanceolate.

Endemic; species 2, found in the Transvaal, Orange Free State, and Natal to the Stockenström district. (Type: *S. coccinea* Backh. & Harv.)

1300 16. GEISSORRHIZA Ker-Gawler, Bot. Mag., t. 672 (1803)

Perianth-tube cylindric, short or long, segments subequal, spreading. *Stamens* inserted in the throat of the perianth-tube; filaments filiform; anthers basifixed. *Ovary* oblong in outline, with numerous ovules; style longer than the perianth-tube; style-branches entire, falcate, subulate, shorter than the style, exceeding the anthers. *Capsule* membranous, loculicidally 3-valved. *Seed* globose or angled by pressure.

Corm tunicated; leaves few, narrow, distichous; inflorescence a simple or branched spike, rarely flowers solitary; outer spathe-valves generally green and herbaceous, with a brown membranous edge.

Species 65, all, with one exception, found in South Africa; the species spread from Namaqualand, through the coastal belt to the Uitenhage district. The locality (Griqualand East) given for *G. gracilis* Bkr. in the *Flora Capensis* is very probably a mistake. (Type: *G. obtusata* Ker-Gawl.)

1301 17. HESPERANTHA Ker in Koenig et Sims Ann. Bot., vol. 1, p. 224 (1805)

Perianth-tube cylindric; segments subequal, spreading. *Stamens* inserted in the throat of the perianth-tube; filaments short. *Ovary* with numerous ovules; style as long as or shorter than the perianth-tube; style-branches subulate, falcate, entire, as long or longer than the style. *Capsule* membranous, loculicidally 3-valved. *Seed* small, globose or angled by pressure.

Corm tunicated; leaves few, narrow, distichous; inflorescence a lax spike; spathe-valves herbaceous, about as long as the perianth-tube.

Species about 30, nearly all found in South Africa; 1 species in Abyssinia and 1 in the Cameroon Mountains; in South Africa, distributed from Namaqualand, through the coastal area to Natal and the eastern Transvaal; also recorded from some of the high mountains in the central districts.

1302 18. *IXIA* Linn., Sp. Pl., ed. 2, p. 51 (1762) partim

Perianth-tube usually short, cylindric, sometimes dilated above; segments subequal, spreading. *Stamens* inserted in the throat of the perianth-tube; filaments free, very rarely connate; anthers sagittate at the base. *Ovary* oblong, with numerous ovules; style filiform, exserted from the perianth-tube; style-branches falcate, spreading, shorter than the style. *Capsule* membranous, loculicidally 3-valved. *Seeds* globose or angled by pressure.

Corm with fibrous tunics; leaves few, linear, distichous; inflorescence a simple or branched spike; spathe-valves brown, emarginate.

Endemic; species between 25 and 30, spread from the Clanwilliam district to the south-western districts and then eastwards to Griqualand East. (Type: *I. polystachya* Linn.)

1303 19. *DIERAMA* C. Koch, Index Sem. Hort. Berol App., p. 10 (1854)

Perianth-tube short to over $\frac{1}{2}$ in. long, dilated at the throat; segments spreading, longer than the tube. *Stamens* inserted in the throat of the perianth-tube; filaments short; anthers sagittate. *Ovary* oblong in outline, with numerous ovules; style longer than the perianth-tube; style-branches entire, clavate, spreading, much shorter than the style. *Capsule* small, membranous, loculicidally 3-valved. *Seed* small, globose or angled by pressure.

Corm with dry coats of parallel fibres; flowering stems from less than 6 in. up to 5 ft. tall, leaves grass-like, rigid, linear, distichous; inflorescence a panicle with erect or pendulous flowers; spathe-valves membranous, acuminate, often speckled.

Species 25, of which 3 are found in tropical Africa; the South African species found in the Transvaal, Swaziland, Basutoland, Orange Free State, and Natal; 1 species extends in the coastal area as far as the Humansdorp district. (Type: *D. pendula* Bkr.)

1304 20. *STREPTANTHERA* Sweet, Brit. Flow. Gard., t. 209 (1827)

Perianth-tube short, funnel-shaped; segments equal, obovate. *Stamens* inserted in the throat of the perianth-tube; filaments flattened. *Ovary* with many ovules; style filiform, reaching to the top of the filaments; style-branches entire, clavate, spreading, shorter than the style. *Capsule* membranous, subglobose. *Seed* small, subglobose.

Corm with fibrous tunics; leaves short, arranged in a fan-shaped rosette; inflorescence a 2—3-flowered spike; spathe-valves large, membranous, lacerated.

Endemic; species 2, recorded from the Tulbagh and Ceres districts. (Type: *S. elegans* Sweet)

1305 21. *MELASPHERULA* Ker, Bot. Mag., t. 615 (1805)

Perianth-tube 0; segments unequal, narrowed into a filiform portion above. *Stamens* inserted at the base of the perianth-segments; filaments arcuate; anthers versatile. *Ovary* 3-lobed, with 2—3 ovules in each chamber; style shorter than the perianth-segments; style-branches filiform, shorter than the style. *Fruit* membranous, deeply and acutely angled, loculicidally 3-valved. *Seeds* oblong, thickened and spongy at the top.

Corm with thin brown tunics; leaves in a distichous basal rosette, linear, thin in texture; inflorescence a lax panicle; spathe-valves herbaceous.

Endemic; species 1, extending from the Clanwilliam to the Uitenhage district. (Type: *M. graminea* Ker)

1306

22. TRITONIA Ker, Bot. Mag., t. 581 (1802)

(Crocasmia Planch; Montbretia DC.)

Perianth-tube cylindric below, funnel-shaped above, varying in length; segments equal or unequal, blunt or shortly acuminate. *Stamens* inserted near the throat of the perianth-tube, unilateral; filaments arcuate; anthers usually versatile. *Ovary* with few to many ovules; style filiform; style-branches spreading, sometimes slightly dilated at the tip, shorter than the style. *Fruit* membranous or subchartaceous, subglobose or longer than broad, 3-grooved or 3-lobed or not conspicuously so. *Seeds* 1—2 or more than 3 in each loculus.

Corm with fibrous reticulated, rarely thin, membranous tunics; basal leaves in a fan-like rosette, linear or ensiform; inflorescence a simple or branched spike; outer spathe-valves notched, toothed, acute or obtuse at the apex, sometimes apiculate; flowers white, rosy, orange, or scarlet.

Species about 55, all African; between 40 and 50 species in South Africa, found mostly in the south-western districts of the Cape Province, but extending from Namaqualand, through the coastal area into Natal; also found in the Transvaal. (Type: *T. squalida* Ker)

1307

23 SPARAXIS Ker, in Koenig et Sims Ann. Bot., vol. 1, p. 225 (1805)

Perianth-tube cylindric below, dilated into a funnel in the upper half; segments subequal, ascending, longer than the tube. *Stamens* inserted in the throat of the perianth-tube, unilateral. *Ovary* with many ovules; style filiform, finally exserted from the perianth-tube; style-branches subulate, falcate, shorter than the style. *Fruit* membranous, turbinate, loculicidally 3-valved. *Seed* globose or angled by pressure.

Corm with finely reticulated tunics; leaves in a fan-like distichous rosette; inflorescence a simple or branched spike, with few flowers; spathe-valves membranous, lacerated, wrapped round the ovary and perianth-tube.

Endemic; species 4 or 5, extending from the Malmesbury to the Uitenhage district.

1308

24. ACIDANTHERA Hochst., in Flora, vol. 27, p. 25 (1844)

(Engysiphon Lewis)

Perianth-tube cylindric, longer than the limb; segments subequal. *Stamens* inserted in or a little below the throat of the perianth-tube, unilateral; filaments arcuate, filiform. *Ovary* with many ovules; style long, filiform; style-branches flattened, falcate, shorter than the style. *Capsule* membranous, loculicidally 3-valved. *Seed* globose or discoid, broadly winged.

Corm tunicated; leaves narrow, linear; inflorescence a lax, simple, few-flowered spike; spathe-valves herbaceous, lanceolate, entire.

An African genus of about 30 species, about half of which occur in South Africa, extending from the Clanwilliam district, through the coastal belt to Natal and the northern Transvaal. (Type: *A. bicolor* Hochst.)

1309

25. SYNNOTIA Sweet, Brit. Flow. Gard., t. 150 (1826)

Perianth-tube long, cylindric below, broadly funnel-shaped above; segments unequal, shorter than the tube; the uppermost segment broadest; the other segments reflexing when the flower is expanded. *Stamens* unilateral, inserted at the dilated upper part of the perianth-tube; anthers basifixed. *Ovary* with many ovules; style filiform; style-branches very short, shorter than the style.

Fruit membranous, with loculicidal dehiscence. *Seed* globose or angled by pressure.

Corm with finely reticulated tunics; leaves in a fan-like distichous rosette; inflorescence a simple or branched spike, with few flowers; spathe-valves membranous, deeply lacerated.

Endemic; species 5, extending from the Clanwilliam to the Cape districts. (Type: *S. variegata* Sweet)

1310 **26. BABIANA** Ker, in Bot Mag., t. 576 (1802)

Perianth-tube long, cylindric, funnel-shaped at the top; segments equal or unequal. *Stamens* unilateral, inserted near the throat of the perianth-tube, usually shorter than the segments. *Ovary* with many ovules; style filiform; style-branches usually flattened at the tip, much shorter than the style. *Fruit* membranous, with loculicidal dehiscence. *Seed* globose or angled by pressure.

Corm tunicated; leaves plicate, strongly ribbed, mostly hairy, often distinctly petioled; inflorescence a simple or branched spike; spathe-valves various in texture, usually lanceolate, pilose, finely ribbed.

Over 80 species described; 1 species occurs in Socrotra, the remainder in South Africa, extending from Namaqualand to the Uitenhage district; also recorded from the central districts and the Transvaal. (Type: *B. plicata* Ker)

1311 **27. GLADIOLUS** Linn., Sp. Pl., ed. 1, p. 36 (1753)

(*Chasmatocallis* Foster)

Perianth-tube funnel-shaped, curved, gradually widening upwards; segments unequal; the three lower segments smaller than the three upper. *Stamens* unilateral, inserted below the throat of the corolla-tube; filaments, filiform, arcuate; anthers basifixed. *Ovary* with many ovules; style filiform; style-branches cuneate at the tip, shorter than the style. *Fruit* obovoid, loculicidally 3-valved. *Seeds* discoid and winged in the South African species.

Plants varying in habit from stemless species to tall stout species 3—4 ft. high; leaves terete, linear or ensiform; inflorescence a spike, rarely flowers solitary; spathe-valves herbaceous, usually large, lanceolate.

Species about 250, natives of Africa, Europe, the Mediterranean, and Oriental regions; about 130 species recorded from South Africa, fairly generally distributed, but absent from the greater part of the central region. (Type: *G. communis* Linn.)

1311a **28. MONTBRETIOPSIS** L. Bolus, S. Afr. Gard. & Country Life, vol. 19, p. 215 (1929)

Flowers pedicelled. *Perianth-tube* narrowly cylindric in the lower two-thirds, campanulate in the uppermost one-third; subbilabiate; upper lip with the lobes broad and obtuse and united high up; lower lip with the lobes longer and narrower than those of the upper lip; each lobe of the lower lip with a prominent wavy cockscomb-like crest on the inner face near the base. *Stamens* unilateral, inserted at the junction of the narrow and broad portion of the perianth-tube, included; anthers linear, shortly sagittate at the base. *Ovary* somewhat turbinate, with several ovules in each chamber; style filiform, included; style-branches long, linear, entire.

A dwarf plant; corm with fibrous tunics, produced into a neck above; leaves linear, falcate; inflorescence cymose; bracts dry, membranous; flowers yellow.

A monotypic genus, recorded from the Prince Albert district of the Cape Province. (Type: *M. florentiae* L. Bolus=*Gladiolus florentiae* Marl.)

- 1311b** **29. EXOHEBA** Foster, Contrib. Gray Herb., Harvard Univ. No. 127, p. 36 (1939)
(*Tritoniopsis* L. Bolus)

Perianth-tube short; lobes clawed. *Stamens* unilateral; filaments inserted below the throat; anthers apiculate. *Style-branches* more or less retuse. *Seed* very narrowly winged or wingless.

Corm small, with fibrous tunics, prolonged above into a densely fibrous collar round the base of the stem; stem simple or branched; leaves few, one to many-nerved; spathe-valves brown, membranous, rigid, short; inflorescence a distichous spike; flowers proterandrous.

Endemic; species 10, found mostly in the south-western districts of the Cape Province. (Type: *E. parviflora* R. C. Foster=*Gladiolus parviflorus* Jacq.)

- 1311c** **30. TANAOSOLEN** N. E. Br., Trans. Roy. Soc. S. Afr., vol. 20, p. 262 (1932)

Flower subregular; perianth-tube 5—6 times as long as the bracts, slender, scarcely enlarged at the mouth; lobes all similar, with the upper lobe a little longer than the others. *Stamens* all exserted, apparently all dorsal; anthers sagittate. *Ovary* oblong in outline, obscurely angled, with 4—5 ovules in each chamber; style exserted; style-branches cuneate, entire.

Leaves cauline, very reduced, linear; spike lax; bracts firm, unequal, with the inner longer than the outer.

A monotypic endemic genus, recorded from the Ceres district of the Cape Province. (Type: *T. nudus* N. E. Br.)

- 1311d** **31. RADINOSIPHON** N. E. Br., Trans. Roy. Soc. S. Afr., vol. 20, p. 262 (1932)

Flowers small; perianth-tube slender, 2—4 times as long as the bracts, slightly enlarged and curved immediately under the lobes; lobes all narrow, with the upper lobe rather broader than the others and slightly arched. *Stamens* under the upper perianth-lobe and slightly shorter than it; anthers sagittate. *Style* exserted, longer or shorter than the stamens; style-branches short, entire. *Capsule* subglobose, shorter than the bracts. *Seed* flattened and angular.

Corm subglobose or conical globose; leaves laterally flattened, linear or filiform; stem simple or branched; spike lax, 2—10-flowered.

An African genus of 5 species; 3 species occur in South Africa, recorded from the Cape Province and the Transvaal.

- 1312** **32. ANTHOLYZA** Linn., Gen. Pl., ed. 5, p. 25 (1754)
(*Babiana ringens* Ker of the Fl. Cap.)

Flowers 2-lipped, with the lips widely gaping; perianth-tube curved, funnel-shaped, very much compressed above the middle; upper lip of one spatulate lobe with the wavy margins of the lower part inrolled so as to form a tube enclosing the stamens and style and the upper part lanceolate, flattened and recurved; lower lip of 5 unequal lobes arising from the projecting front of the mouth of the tube. *Stamens* inserted at about the middle of the perianth-tube, usually longer than the upper lip of the flower. *Ovary* with 5—6 ovules in each chamber; style exserted beyond the stamens; style-branches filiform, papillose all along the inner side.

Corm subglobose; leaves radical, plicate, linear or linear-lanceolate, acute; stem erect or somewhat curved, pubescent, usually producing one sessile lateral

flower-spike bent at a wide angle from it near the base; upper part of the stem naked, with a few barren bracts or a single flower at its apex; spike densely several-flowered, with the flowers all on the upper side; bracts herbaceous, acute and awned or mucronate, pubescent, obliquely ascending from the axis.

A monotypic endemic genus, extending from the Clanwilliam to the Cape districts; also recorded from the Malmesbury district. (Type: *A. ringens* Linn.)

NOTE.—In the *International Rules of Botanical Nomenclature*, p. 139 (1935), A. S. Hitchcock and M. L. Green have proposed the name *A. cunonia* L. as the type of the genus.—E. P. P.

1312a 33. *ANACLANTHE* N. E. Br., Trans. Roy. Soc. S. Afr., vol. 20, p. 269 (1932)

Flowers obliquely ascending, unequally 2-lipped. *Perianth-tube* curved backwards at the middle and dilated above the curve; upper lip of one concave lobe; lower lip of 5 unequal lobes. *Stamens* under and equalling or longer than the upper lip of the flower and inserted at the dilation of the tube; anthers sagittate. *Ovary* ellipsoid-oblong, somewhat truncate at the apex, 3-chambered, with 2 ovules in each chamber; style exerted beyond the stamens; style-branches entire, cuneately clavate, papillose only on the obliquely truncate apex.

Corm subglobose, very deeply buried in the soil; leaves radical, linear, acute, plicate; stems with 1—4 sessile spreading lateral spikes and a terminal one; spikes densely many-flowered, with the flowers in 2 rows on the upper side; bracts obliquely imbricating, acute, pubescent except at the brown or purplish tips.

Endemic; species 2, found in the Piquetberg and Clanwilliam districts; also in Namaqualand. (Type: *A. plicata* N. E. Br.=*Babiana thunbergii* Ker)

1312b 34. *CURTONUS* N. E. Br., Trans. Roy. Soc. S. Afr., vol. 20, p. 270 (1932)

Perianth-tube curved and sharply narrowed below the middle into a slender part; lobes unequal, narrowly oblong or linear-oblong; upper lobe concave and longer than the other five. *Stamens* about as long as and seated immediately under the upper lobe; 2 inserted near the dilated part of the perianth-tube; 1 inserted at the base of the dilated part of the perianth-tube. *Ovary* scarcely twice as long as broad, ovoid, with 8—10 ovules in each chamber.

Corm subglobose; leaves basal, very broad, ensiform or lanceolate; stem stout, paniculately branched; branches ending in a spike; spike many-flowered, with a zigzag axis; bracts equal, obtuse.

A monotypic endemic genus found in the Transvaal, Swaziland, Basutoland, and Natal. (Type: *C. paniculatus* N. E. Br.=*Antholyza paniculata* Klatt)

1312c 35. *PETAMENES* Salisb. ex N. E. Br., Trans. Roy. Soc. S. Afr., vol. 20, p. 276 (1932)

(*Kentrosiphon* N. E. Br., *Chasmanthe* N. E. Br., *Anomalesia* N. E. Br.)

Perianth-tube curved, contracted below into a slender basal part, with or without a short spur or sac; lobes unequal; upper lobe much longer than the other five, spatulate, concave or hooded. *Stamens* nearly as long as and seated under the upper lobe, arising from the same or different levels on the perianth-tube. *Capsule* ellipsoid, shorter than the bracts, sometimes angular and winged. *Seeds* many, flat, broadly winged.

Corm small, globose or subglobose, sometimes producing stolons that end in a corm; leaves basal or cauline, linear or ensiform; stem simple or branched; spikes solitary or sometimes up to 4; flowers 3—25 in a spike; bracts firm or somewhat herbaceous, equal or unequal.

An African genus of 23 species; 16 species occur in South Africa extending from South West Africa, through the coastal belt to the Kentani district. (Type: *P. abbreviatus* N. E. Br.=*Antholyza quadrangularis* Baker non Burm.)

- 1312f** **36. ANAPALINA** N. E. Br., Trans. Roy. Soc. S. Afr., vol. 20, p. 274 (1932)

Perianth-tube curved, contracted near or below the middle into a slender basal part; lobes subequal, obliquely placed; upper lobe directed forward; others more or less recurved-spreading, not overlapping. *Stamens* exerted, inserted at the base of the dilated part of the perianth-tube. *Ovary* ovoid, scarcely or not twice as long as broad, with 8—12 ovules in each chamber. *Capsule* ellipsoid, 2—3 times as long as the bracts. *Seed* flattened, winged all round.

Corm subglobose, with fibrous tunics; basal leaves ensiform or linear, with very conspicuous nerves; cauline leaves subulate or very much reduced; stem unbranched; spike dense, 10—30-flowered; bracts firm, with the inner much longer than the outer.

Endemic; species 4, found in the south-western districts of the Cape Province. (Type: *A. triticea* N. E. Br. = *Antholyza lucidor* Linn. f.)

- 1312h** **37. HOMOGLOSSUM** Salisb., Trans. Hort. Soc. Lond., vol. 1, p. 325 (1812) sine descr.

Perianth-tube curved, contracted near or below the middle into a slender basal part; limb oblique; lobes broad, regularly arranged and sometimes overlapping, subequal, with the dorsal lobe rather larger than the others. *Stamens* inserted much below the middle of the dilated part of the perianth-tube or at the base of the dilated part. *Capsule* shorter than the outer bract. *Seeds* numerous in each loculus, flat, winged all round.

Corm subglobose, with the lower part of the tunic split into fibres or narrow segments; leaves few, subulate or linear; stem unbranched; spike terminal, lax, 1—8-flowered; bracts herbaceous, with the outer longer than the inner.

An African genus of 13 species; 10 species recorded from the south-western districts of the Cape Province and extending to the Albany district. (Type: *H. watsonianum* N. E. Br. = *Antholyza revoluta* Bak. Fl. Cap., vol. 6, p. 169, not of Burm.)

- 1313** **38. MICRANTHUS** Eckl., Verz. Pflanzensamml. p. 43 (1827)

Perianth-tube curved, subcylindric, shorter than the limb; segments spreading, subequal. *Stamens* inserted in the throat of the perianth-tube, unilateral; filaments filiform, arcuate; anthers sagittate, versatile. *Ovary* with 2 ovules in each chamber; style filiform; style-branches filiform, bifid, shorter than the style. *Fruit* membranous, loculicidally 3-valved. *Seeds* 1—2 in each loculus, lanceolate.

Corm with thick reticulated tunics; leaves sheathing the stem, superposed; inflorescence a dense distichous spike; outer spathe-valve with a rigid centre and a broad hyaline margin; flowers red.

Endemic; species 3, found from the Cape to the Uitenhage district. (Type: *M. alopecuroides* (L.) Eckl.)

- 1313a** **39. PILLANSIA** L. Bolus, Ann. Bol. Herb., vol. 1, p. 20 (1914)

Perianth-tube shorter than the limb; segments equal, twice as long as the perianth-tube. *Stamens* equilateral, inserted slightly below the middle of the perianth-tube; anthers sagittate at the base; style filiform; style-branches bifid, truncate, shorter than the style.

Corm persistent, as many as 20 superposed; the younger corms densely covered with fibrous tunics; stem bearing 3—4 foliaceous sheaths; developed leaf 1, linear, laxly twisted; inflorescence a lax panicle of cymes; flower-spates herbaceous in the lower half, chartaceous round the margins.

Endemic; species 1, found in the Caledon district. (Type: *P. templemanni* L. Bolus=*Tritonia templemanni* Bak.)

1314 **40. LAPEYROUSIA** Pourr., Mem. Acad. Toulouse, vol. 3, p. 79, t. 6 (1788)

Perianth-tube subcylindric, slightly dilated towards the throat, longer than the limb; segments subequal, spreading. *Stamens* inserted in the throat of the perianth-tube, unilateral; filaments short, arcuate; anthers sagittate at the base, basifixed. *Ovary* with numerous ovules; style filiform; style-branches bifid, shorter than the style. *Fruit* membranous, oblong or globose, with loculicidal dehiscence. *Seed* globose or angled by pressure.

Corm flattened at the base, with matted tunics; produced leaves 1—2, basal, distichous; inflorescence various; spathe-valves mostly herbaceous.

An African genus with over 60 species; 44 species recorded from South Africa, extending from South West Africa to Natal and the Transvaal; also found in the central districts.

1315 **41. WATSONIA** Mill., Gard. Dict., ed. 7 (1759)

(*Beilia* Eckl.; *Thereianthus* Lewis)

Perianth-tube curved, cylindric below, funnel-shaped above; segments subequal, spreading, shorter than the tube. *Stamens* inserted below the throat of the perianth-tube, unilateral; anthers versatile. *Ovary* globose, with many ovules; style filiform; style-branches subulate, bifid, shorter than the style. *Fruit* oblong in outline, loculicidally dehiscent. *Seed* globose or angled by pressure.

Corm tunicated; leaves usually rigid in texture, generally ensiform; inflorescence a simple or branched spike; spathe-valves entire, rigid, brown or herbaceous.

Species described 77, one of which occurs in Madagascar; the remainder found in South Africa, extending from the Clanwilliam district, through the coastal area to Natal and the Transvaal.

1316 **42. FREESIA** Klatt, in Linnaea, vol. 34, p. 672 (1866)

Perianth-tube distinct, usually curved, funnel-shaped in the upper portion, abruptly or gradually narrowed downwards into a slender portion; lobes either all similar and slightly and gradually narrowed to the base or the 3 inner dissimilar from the outer and either rounded in or cordate or earlobed at the base. *Stamens* 3; anthers linear, never reaching to the tips of the upper perianth-lobes. *Style* equalling or longer than the stamens; style-branches deeply bifid. *Capsule* subglobose, with loculicidal dehiscence. *Seed* subglobose.

Corm with fibrous tunics; leaves 2-ranked, laterally flattened; stem simple or branched; inflorescence a spike, with the axis usually bent at an abrupt angle from the stem or its branches, but occasionally continuous with it; flowers all on the upper side of the spike.

An endemic genus of 19 or more species. (Type: *F. corymbosa* (Burm.) N. E. Br.)

31. MUSACEAE

Flowers zygomorphic, unisexual or bisexual. *Calyx* elongated, at first narrowly tubular, soon splitting on one side, variously toothed at the apex or free and more or less adnate to the corolla, or linear and united below into a very long and slender stalk-like tube. *Corolla* more or less 2-lipped, often

truncate and variously toothed at the apex or variously connate and sometimes very unequal or with the 2 lateral petals small and the middle one forming a large coloured lip. *Stamens* usually 5, sometimes with a sixth rudimentary stamen; anthers 2-theous, with the thecae parallel. *Ovary* inferior, 3-chambered, with one to many ovules in each chamber; style filiform, usually with a lobed stigma. *Fruit* indehiscent or a 3-locular capsule or a fleshy indehiscent berry.

Acaulescent herbs or with tall stems; leaves spirally or distichously arranged, sometimes embracing each other by the sheaths of the petioles, medium-sized to very large.

Genera 5 or 6; species about 140, natives of Madagascar, Brazil, the Malay Archipelago, and South Africa.

Tall plants; petal 1; fruit a berry; seeds not woolly

1. *Ensete* Horan.

Stemless or with a distinct stem; petals 3, blue or white; fruit a capsule; seed covered with a woolly aril ...

2. *Strelitzia* Ait.

NOTE.—J. Hutchinson, *The Families of Flowering Plants (Monocotyledons)*, p. 72 (1934), recognizes 3 families, viz. *Musaceae*, *Strelitziaceae* and *Lowiaceae*.—E. P. P.

1318a

1. *ENSETE* Horan., Prodr. Scitam., p. 41 (1862)

Flowers bisexual or unisexual; those of the lower bracts bisexual or female; those of the upper bracts male. *Petal* 1, tricuspidate, sometimes entire. *Stamens* 5 (4 plus 1 staminode); filaments as long as the anthers; anthers linear. *Ovary* inferior, 3-chambered; style short; stigma 3—5-lobed; ovules few. *Fruit* leathery, dry, indehiscent, 3-locular; seeds by abortion 1, 3, or 4, usually exceeding 1 cm. in diameter, globose or irregular, most commonly smooth, with a conspicuous irregular and usually deeply sunken hilum.

Usually large single-stemmed herbs; leaves large; blade oblong, commonly narrowed below into a short or rather long petiole; petiole expanded and sheathing at the base, often not completely encircling the stem; upper leaves passing gradually or suddenly into bracts; inflorescence pendulous; flowers many to each bract, in two rows; bracts usually persistent.

Species 25, mainly African; also found in India, Burma, southern China, Siam, the Philippine Islands, Java, and New Guinea; 1 species in South Africa, recorded from near Haenertsburg in the north-eastern Transvaal. (Type: *E. edule* Horan.)

NOTE.—The South African species was described by O. Stapf in *Kew Bulletin*, p. 102 (1913), as *Musa darvae*. It was figured in the *Flowering Plants of South Africa* on plate 810.—E. P. P.

1319

2. *STRELITZIA* Dryand, in Ait. Hort. Kew., ed. 1, vol. 1, p. 285 (1789)

Flowers bisexual. *Sepals* 3, yellow or white; the lower sepal more concave than the others. *Petals* 3, free, blue or white; the 2 lower petals connivent and forming a sagittate blade with a central channel in which the stamens and style are placed; the third petal much smaller. *Stamens* 5, all perfect; anthers 2-theous, with the thecae parallel. *Ovary* inferior, 3-chambered, with many ovules in each chamber; style with 3 linear branches. *Fruit* a 3-angled loculicidal capsule. *Seeds* few, with a woolly aril.

Stemless plants or with a stem; leaves distichous, more or less oblong; petiole up to 6 ft. long, deeply channelled down the face; peduncles erect; flowers several in the axis of a coriaceous bract.

Endemic; species 4, extending from Natal and the Transvaal to the Humansdorp and Knysna districts. (Type: *S. reginae* Dryand)

32. ZINGIBERACEAE

Flowers bisexual, occasionally some flowers unisexual, zygomorphic. *Perianth* 6-merous, in 2 series; the outer series calyx-like; the inner series corolla-like and often showy and delicate; outer segments united into a tube; inner segments more or less united, with the posterior segment usually the largest. *Upper* stamen of the inner whorl alone fertile, often with a broad connective; lateral stamens of the inner whorl united to form a conspicuous petaloid labellum; the 2 lateral stamens of the outer whorl sometimes present as staminodes. *Ovary* inferior, 2—3- (rarely 1-) chambered, with axile placentation, sometimes 1-chambered with parietal placentation; style terminal, undivided, free or more or less enveloped in a groove of the fertile stamen or sometimes 2-lipped or dentate; ovules mostly numerous. *Fruit* fleshy and indehiscent or loculicidally 3-valved. *Seed* generally arillate; endosperm abundant, white, hard or mealy.

Genera 44, with over 300 species, found in the tropics of both hemispheres but chiefly Asiatic.

1346

KAEMPFERIA Linn., Sp. Pl., ed. 1, p. 2 (1753)

(*Siphonochilus* Wood & Franks)

Flowers bisexual, rarely with occasional unisexual flowers. *Calyx* tubular or often spathaceous and split down one side, membranous. *Corolla-tube* shorter or longer than the calyx, sometimes in the female flowers very long and narrow; lobes lanceolate or linear; labellum entire or divided. *Filament* of fertile stamen broad, flat, short; anthers 2-theous, linear, with the connective produced above into a petaloid entire lobed or toothed appendage; lateral stamens conspicuous, usually longer than the corolla-lobes, free or (in the South African species) united to the lip; lip more or less 2-lobed, rarely entire, usually much larger than the lateral staminodes. *Ovary* 3-chambered, with many ovules in each chamber; style filiform; stigma funnel-shaped. *Nectary* consisting of 2 narrowly cylindric or filiform glands.

Herbs; rhizome thick, often aromatic; stem usually very short; leaves oblong to lanceolate, usually with long sheaths; inflorescence a spike or subcapitate or flowers solitary; flowers usually large, pedicelled or subsessile, with the ovary sometimes subterranean; bracts lanceolate or oblong, membranous to almost coriaceous.

Species about 90, natives of Africa and tropical Asia; 3 species occur in South Africa, recorded from the northern Transvaal, Natal, and the Transkei. (Type: *K. galanga* Linn.)

33. BURMANNIACEAE

Flowers bisexual. *Perianth* corolla-like, usually 6-lobed; tube cylindric or gibbous, sometimes winged; lobes in 2 series, with the outer series larger or lobes 3 and in one whorl. *Stamens* 3—6, inserted on the perianth-tube, sessile or subsessile; anthers with 2 widely separated thecae; connective dilated. *Ovary* inferior, 1-chambered and with 3 parietal placentas or 3-chambered and with 3 axile placentas; style simple; stigmas 3, often 2—3-fid; ovules numerous. *Fruit* a capsule, usually crowned by the dried-up perianth, 3-angled or 3-winged, opening by apical valves or longitudinal slits or by a lid. *Seeds* small, numerous, with scanty endosperm.

Slender and sometimes very delicate annual or perennial saprophytic herbs; leaves present or reduced to scales, when present leaves crowded at the base of the

stem; flowers mostly blue or white, very rarely yellow, solitary, racemously arranged or sometimes on one side of a bifurcate cyme.

Genera 10; species about 50, dispersed throughout the tropics of both hemispheres.

1382

BURMANNIA Linn., Sp. Pl., ed. 1, p. 287 (1753)

Perianth 6-lobed; tube prominently 3-angled or 3-winged; inner perianth-lobes smaller than the outer or sometimes absent. *Anthers* 3, subsessile on the perianth-tube; connective produced at the apex into an entire or 2-partite crest. *Ovary* 3-chambered, with numerous ovules in each chamber; style shortly 3-lobed. *Capsule* more or less 3-winged.

Erect unbranched herbs, with minute leaves or scales, sometimes with larger basal leaves; flowers blue or white, rarely yellow, solitary and terminal or many and in cymes.

Species about 87, found in the tropics of both hemispheres; 1 species recorded from the Transvaal. (Type: *B. disticha* Linn.)

34. ORCHIDACEAE

Flowers bisexual or very rarely polygamous or unisexual, zygomorphic. *Perianth* in 2 whorls; outer whorl (*sepals*) of 3 segments, mostly coloured and petaloid, sometimes green; odd sepal either in front (*anticous*) or generally the ovary twisted and then the odd sepal behind (*posticous*) often hood-shaped (*galeate*); inner whorl (*petals*) of 3 segments; 2 lateral segments often smaller than the odd segment which forms a lip or labellum; lip when anticous often lobed, sometimes spurred, when posticous sometimes galeate. *Stamen* 1; anther 2-theous, with the pollen usually cohering in 2, rarely 4 or 8, masses (*pollinia*); each pollinium attached to a viscid gland, rarely both pollinia attached to a common gland; pollinia either sessile on the glands or attached to glands by a stalk (the *caudicle*). *Ovary* inferior, 1-chambered, with many ovules on 3 parietal placentas; upper continuation of the ovary combined with some parts of the modified stamen to form a *column* which usually bears the stigma in front; stigma simple or lobed, with the third branch transformed into a special organ (the *rostellum*) which usually bears the glands of the pollinia on its lateral projections (arms of the rostellum). *Fruit* a capsule; seeds numerous and extremely small.

Perennial herbs, terrestrial, epiphytic or saprophytic, with rhizomes or tuberous roots; stem leafy or scapose, frequently thickened at the base into pseudobulbs and bearing aerial assimilating roots; leaves simple, alternate, often distichous, rarely opposite, sometimes all reduced to scales, often fleshy, sheathing at the base, with the sheath nearly always closed and encircling the stem; inflorescence a spike, raceme, panicle, or flowers solitary.

Genera between 300—400; species over 5,000, found throughout the globe except in the highest latitudes and altitudes and the more remote oceanic islands, rare in very dry countries; the epiphytic species mostly confined to the intertropical zone within which they are most numerous in the mountains of tropical Asia and America.

- | | | |
|--|--------|----|
| 1. Flowers with the lip, odd sepal, or lateral sepals spurred or saccate | ... | 2 |
| Flowers not spurred or saccate | ... .. | 28 |
| 2. Lips with 2 sacs or spurs, very rarely spurs subobsolete | ... .. | 3 |
| Lip with a single sac or spur or the odd sepal or lateral sepals with a single sac or spur | ... .. | 5 |

3. Pollinia attached to a single orbicular gland **15. Satyridium** Lindl.
Pollinia attached to separate glands 4
4. Sepals and petals free or the petals more or less united to the sepals at the base **14. Satyrium** Sw.
Sepals and petals united almost to the apex into a broad oblong spreading papillose limb **16. Aviceps** Lindl.
5. Lateral sepals dorsally saccate or spurred about the middle **26. Disperis** Sw.
Odd sepal or lip saccate or spurred 6
6. Odd sepal saccate or spurred... .. 7
Lip saccate or spurred 13
7. Pollinia attached to a single gland, very rarely to separate glands and then the lip deeply lacerate-multifid 8
Pollinia attached to separate glands... .. 10
8. Lip sessile or long-stalked, deeply fringed, crenate, or subentire or dilated and variously lobed at the apex **24. Herschelia** Lindl.
Lip linear or oblong, rarely elliptic, entire 9
9. Anther erect or reclinate; leaves usually cauline and gradually reduced upwards or the lower leaves subradical and the upper reduced to short sheaths **25. Monadenia** Lindl.
Anther much reflexed; leaves narrow, grass-like, springing from a basal sheath **22. Amphigena** Rolfe
10. Odd sepal inferior **21. Orthopenthea** Rolfe
Odd sepal superior 11
11. Petals more or less adhering to the inner sides of the mouth of the dorsal sepal and adnate to the column at the base **19. Brownleea** Harv.
Petals free 12
12. Lip fiddle-shaped or subfiddle-shaped, with a broad or concave base, often narrowed or acuminate in front, sometimes with a filiform appendage **18. Schizodium** Lindl.
Lip usually small and narrow **20. Disa** Berg.
13. Pollinia attached to a single gland 14
Pollinia attached to separate glands... .. 20
14. Leaves petioled; pollinia 8 **42. Calanthe** R. Br.
Leaves not petioled; pollinia 2 or 4 15
15. Herbs with 1 or 2 sessile radical leaves; inflorescence usually a secund spike on a slender usually hairy peduncle **2. Holothrix** L. C. Rich.
Herbs with distichous leaves; inflorescence a raceme or panicle 16
16. Epiphytic herbs; leaves articulated to a persistent basal sheath 17
Terrestrial herbs, very rarely epiphytes; leaves persistent, not articulated to a persistent basal sheath 18
17. Pollinia attached to a single stipe **46. Angraecum** Berg.
Pollinia attached to distinct stipes which are sometimes united at the base only **47. Listrostachys** Reichb. f.
18. Inflorescence terminal **39. Acrolophia** Pfitz.
Inflorescence lateral 19

19. Petals like the sepals or a little broader, sometimes differently coloured
 Petals erect, generally much larger and broader than the sepals and
 differently coloured 44. *Eulophia* R. Br.
 43. *Lissochilus* R. Br.
20. Lip deeply fimbriate-multifid 6. *Bartholina* R. Br.
 Lip entire or 3-lobed 21
21. Epiphytic plants 48. *Mystacidium* Lindl.
 Terrestrial herbs 22
22. Rostellum entire, sometimes subulate or tooth-like 23
 Rostellum 3-lobed; the middle lobe usually the smallest 24
23. Rostellum subulate or tooth-like 4. *Peristylus* Blume.
 Rostellum broad 17. *Schizochilus* Sond.
24. Stigmas more or less confluent, often pulvinate
 Stigmas bilobed or produced into 2 processes 3. *Platanthera* L. C. Rich.
 25
25. The base of the lateral sepals, the anterior lobe of the petals and the base
 of the stigmatic processes united with the claw of the lip
 10. *Bonatea* Willd.
 The claw of the lip not united with the other parts of the flower 26
26. Rostellum minutely 3-lobed 7. *Cynorchis* Thouars
 The middle lobe of the rostellum subulate or tooth-like; the side lobes
 much longer and acting as carriers for the caudicles of the pollinia 27
27. Stigma bifid 9. *Centrostigma* Schltr.
 Stigma not bifid 8. *Habenaria* Willd.
28. Pollinia free 29
 Pollinia attached by caudicles to a single or separate glands 31
29. Flowers arranged on either side of a flattened rhachis
 45. *Megaclinium* Lindl.
 Flowers in racemes 30
30. Pollinia 4 38. *Liparis* L. C. Rich.
 Pollinia 2, sometimes confluent into one 34. *Pogonia* Juss.
31. Pollinia attached to a single gland 32
 Pollinia attached to separate glands... .. 39
32. Pollinia 4, if only 2, then epiphytes 33
 Pollinia 2, not epiphytes 37
33. Lip continuous with the base of the column; column with a distinct foot
 Lip adnate to or articulate to the base of the column; column without
 a foot 34
 35
34. Inflorescence terminal 39. *Acrolophia* Pfitz.
 Inflorescence lateral 44. *Eulophia* R. Br.
35. Lip superior 40. *Polystachya* Hook.
 Lip inferior 36
36. Inflorescence a panicle; disc of lip 2—3-keeled
 41. *Ansellia* Lindl.
 Inflorescence a raceme; disc of lip not keeled
 38. *Liparis* L. C. Rich.

37. Column elongated, clavate at the apex, terminating in 2 erect lobes or auricles; lip dilated into a short recurved limb
 37. *Corymbis* Thouars
 Column very short or elongated, without processes 38
38. Column very short; lip dilated at the apex into a small entire or larger 2-lobed spreading limb 35. *Zeuxine* Lindl.
 Column elongated, subterete; limb of lip very little dilated, shorter than the sepals 36. *Platylepis* A. Rich.
39. Lip with an appendage 40
 Lip without an appendage 45
40. Odd sepal inferior 41
 Odd sepal superior 42
41. Pollinia didymous; stigmas 2 on the face of the column near the base; bracts linear 30. *Ceratandra* Eckl.
 Pollinia not didymous; stigma situated between the arms of the rostellum; bracts ovate or ovate-lanceolate 29. *Anochilus* Rolfe
42. Anther-thecae lateral or suberect, with the caudicles and glands more or less horizontal or pointing downwards 43
 Anther-thecae erect or inverted, with the caudicles and glands pointing upwards 44
43. Limb of lip half-moon-shaped or divergently bilobed, with a large subquadrate or bilobed fleshy appendage 32. *Evota* Rolfe
 Limb of lip broadly triangular-hastate, with a spreading tooth-like fold on either side near the base; appendage erect, shortly clawed, obovate and denticulate at the apex 28. *Ommatodium* Lindl.
44. Petals not contracted in front or saccate at the base
 27. *Pterygodium* Sw.
 Petals somewhat contracted in front, concave or obliquely saccate at the base 33. *Corycium* Sw.
45. Lip much fimbriated 5. *Huttonaea* Harv.
 Lip entire or 3—5-lobed 46
46. Odd sepal inferior 47
 Odd sepal superior 49
47. Rostellum produced on each side of the column into adnate ciliate wings 12. *Forficaria* Lindl.
 Rostellum produced into horn-like appendages or with short side arms, not ciliate 48
48. Rostellum fleshy, pyramidal or horseshoe-shaped, with two horn-like appendages... .. 11. *Pachites* Lindl.
 Rostellum erect, emarginate, obovate, bifid or trifid, with short side arms 21. *Orthopenthea* Rolfe
49. Lip 3—5-lobed or 3-toothed 50
 Lip entire 51
50. Leaves cauline, decreasing upwards into the bracts
 13. *Brachycorythis* Lindl.
 Leaves radical 1. *Stenoglottis* Lindl.
51. Column produced upwards into a pair of broad diverging arms
 31. *Ceratandropsis* Rolfe
 Rostellum 3-partite, with divaricate side lobes
 23. *Penthea* Lindl.

1407 **1. STENOGLOTTIS** Lindl., Hook. Comp. Bot. Mag., vol. 2,
p. 209 (1836)

Sepals free, subequal. *Petals* somewhat narrower than the sepals. *Lip* continuous with the base of the column, 3—5-fid. *Column* very short and broad. *Anther-thecae* parallel; pollinia 2, granular, affixed by a short stipe to a small oblong gland. *Stigmatic processes* 2, clavate or capitate. *Capsule* oblong, erect.

Terrestrial herbs with short stems and tuberiferous or thickened fleshy fasciculate roots; leaves radical, numerous, rosulate or tufted; inflorescence a loose or sometimes dense somewhat one-sided raceme; bracts small.

An African genus of 4 species; 3 species in South Africa, extending from the eastern Transvaal, Zululand, and Natal, through the coastal area to the Albany district. (Type: *S. fimbriata* Lindl.)

1408 **2. HOLOTHRIX** L. C. Rich ex Hook, Comp. Bot. Mag., vol. 2,
p. 209 (1836)

Sepals subequal, connivent, sometimes hairy. *Petals* longer than the sepals, entire or variously divided at the apex. *Lip* adnate to the base of the column, spurred at the base, divided at the apex into 3 to many segments. *Column* very short, usually auricled at the sides of the stigma. *Anther-thecae* ovoid, adnate, distinct; pollinia 2, with very short caudicles attached to a single naked gland. *Capsule* ovoid or oblong in outline.

Terrestrial herbs with 1 or 2 sessile ovate or orbicular-reniform radical leaves; flowers usually in second spikes and slender usually hairy scapes.

An African genus of 42 species; 25 species occur in South Africa, found on the Cape Peninsula, the Albany district, the eastern Orange Free State, Natal, and the northern Transvaal; also recorded from the Somerset East district; 2 species occur in Madagascar and 1 in the Comoro Islands. (Type: *H. hispidula* (L.f.) Dur. & Schinz=*Orchis hispidula* L.)

1410 **3. PLATANThERA** L. C. Rich., Mém. Mus. Paris, vol. 4, p. 48
(1818)

(*Diplacorchis* Schltr.)

Sepals unequal, free; lateral sepals more or less spreading or reflexed. *Petals* usually narrower than the dorsal sepal and adpressed to it, forming a hood. *Lip* continuous with the column, sometimes adnate to it, produced at the base into a short or much elongated spur, entire or 3-lobed, rarely 2-lobed; the side lobes sometimes fimbriate or pectinate. *Column* short. *Anther-thecae* parallel or diverging; pollinia 2, with short caudicles and exserted naked glands. *Rostellum* 3-lobed, with the middle lobe subulate or tooth-like. *Capsule* elliptic or oblong in outline.

Erect terrestrial herbs with ovoid-globose or rarely somewhat lobed tubers; leaves radical or cauline; inflorescence a dense or lax spike or raceme; bracts narrow or rarely somewhat leafy.

Species about 130, found mostly in temperate and subtropical regions of the northern hemisphere; 2 species occur in South Africa, one of which extends from the Riversdale to the Albany districts, the other found in Natal, the Transvaal, and also in tropical Africa.

NOTE.—Schlechter based his genus *Diplacorchis* on the Transvaal plant *Platanthera tenuior* Schltr., which he stated had a 2-lobed lip. A dissection of a plant collected near Pretoria showed a 3-lobed lip, so that the distinction between the two genera is not valid.—E. P. P.

1410a **4. PERISTYLUS** Blume, Bydr., p. 404, t. 30 (1825)

Sepals free, subequal. *Petals* similar to the sepals. *Lip* continuous with the column, free or slightly adnate to it, spurred at the base, entire or 3-lobed.

Anther-thecae parallel; pollinia 2, with short caudicles and on exserted naked glands. *Rostellum* subulate or tooth-like. *Capsule* ellipsoid or oblong in outline.

Terrestrial herbs with oblong or subglobose tubers; leaves radical and cauline, decreasing upwards; inflorescence a narrow spike or raceme; bracts lanceolate.

Species about 72, the majority Indian and extending into the Malayan and Chinese regions; 6 species in tropical Africa; 1 species recorded from Natal.

1414 5. HUTTONAEA Harv., Thes. Cap., vol. 2, pt. 1, t. 101 (1863)

Dorsal-sepal free, clawed, lanceolate or ovate, erect; lateral sepals larger and broader, oblique, spreading. *Petals* clawed, with the claw united at the base to the claw of the dorsal sepal; limb broad or suborbicular, much fimbriated. *Lip* much fimbriated. *Column* short and broad. *Anther-thecae* adnate; pollinia 2, solitary in the thecae, with somewhat elongated caudicles attached to separate glands. *Rostellum* 3-lobed, with the side lobes complicate round the caudicles of the anther. *Capsule* oblong in outline.

Terrestrial herbs with a globose tuber; leaves few, decreasing upwards; inflorescence a short or lax raceme; bracts lanceolate.

Endemic; species 5, extending from the Stockenström district, through the Transkei and Griqualand East into Natal; also found in the eastern Orange Free State. (Type: *H. pulchra* Harv.)

1416 6. BARTHOLINA R. Br., in Ait. Hort. Kew., ed. 2, vol. 5, p. 194 (1813)

Sepals subequal, free, erect. *Petals* coloured, about as long as the sepals. *Lip* adnate to the column at the extreme base, spurred, deeply fimbriate-multifid. *Column* very short below the anther; stigma not produced. *Anther-thecae* subparallel, adnate; pollinia 2, solitary in the thecae; caudicles very long, attached to separate glands.

Dwarf terrestrial herbs, with ovoid-oblong tubers; leaves solitary, basal, reniform-orbicular and amplexicaul; flowers solitary at the apex of a short hairy scape.

Endemic; species 3, found in the south-western districts of the Cape Province; 1 species extends as far as the Albany district. (Type: *B. pectinata* R. Br.)

1421 7. CYNORCHIS Thouars, Hist. Pl. Orchid., t. 13 (1822)

Sepals subequal; dorsal sepal erect, concave; lateral sepals oblique and spreading. *Petals* entire, narrower than the dorsal sepal and adpressed to its margin, forming a hood. *Lip* inferior, continuous with the column, spurred at the base, 3—5-lobed. *Column* very short and broad. *Anther-thecae* diverging; pollinia 2, granular, extended into slender caudicles, terminating in small exserted naked glands. *Stigma* bilobed, extended into a pair of oblong or clavate papillose processes; rostellum trilobed. *Capsule* erect, oblong in outline or fusiform, sometimes shortly beaked.

Terrestrial herbs with fasciculate fleshy roots sometimes thickened into tubers; leaves radical, few or solitary; inflorescence a short or elongated raceme; bracts small or narrow.

Species about 100, the majority natives of the Mascarene Islands; a few in tropical Africa, China, and Japan; 3 species in South Africa, found in Griqualand East, Natal, and the northern Transvaal.

1422 8. HABENARIA Willd., Sp. Pl., vol. 4, pt. 1, p. 44 (1805)

Sepals unequal, free. *Petals* simple or deeply bilobed, usually narrower than the dorsal sepal and adpressed to it forming a hood or the upper lobe

alone adpressed and the lower lobe descending and simulating a lobe of the lip. *Lip* continuous with the column, often shortly adnate to it, produced at the base into a spur, entire or 3-lobed, with the side lobes somewhat fimbriate or pectinate. *Column* short. *Anther-thecae* parallel or diverging; pollinia 2, granular, with the caudicles fixed to exerted naked glands. *Stigma* extended into 2 short or elongate, often clavate, papillose processes. *Rostellum* 3-lobed, with the middle lobe subulate or tooth-like. *Capsule* oblong in outline or ellipsoid, sometimes beaked.

Terrestrial herbs with ovoid-globose or rarely lobed tubers; inflorescence a lax or dense spike or raceme; bracts mostly narrow.

Species close on 800, widely diffused through tropical and subtropical regions; 42 species in South Africa, extending from South West Africa through the coastal districts to Zululand; also found in the Transvaal and the eastern Orange Free State. (Type: *H. macroceratilis* Willd.)

1422a **9. CENTROSTIGMA** Schltr., Engl. Bot. Jahrb., vol. 53, p. 523 (1915)

Sepals unequal; dorsal sepal galeate; lateral sepals lanceolate. *Petals* about as long as the sepals; lateral petals entire; lip deeply 3-lobed, with the lateral lobes pectinate. *Spur* very long. *Column* curved. *Stigma* 2-lobed, with 2 chitinous horns from the inner face at the base and a chitinous horn at each side. *Pollinia* with very long caudicles which lie in 2 curved channelled processes from the column.

Terrestrial herb with ovoid-globose tubers; inflorescence a somewhat lax raceme.

Endemic; species 1, found in the Transvaal; a doubtful second species is described. (Type: *Habenaria schlechteri* Kränzl. ex Schltr.)

1422b **10. BONATEA** Willd., Sp. Pl., vol. 4, pt. 1, p. 43 (1805)

Sepals unequal, free; dorsal sepal erect; lateral sepals oblique, reflexed. *Petals* deeply bipartite. *Lip* continuous with the column, produced at the base into a spur, adnate at the base to the base of the lateral sepals, the anterior lobe of the petals and the stigmatic processes, tripartite. *Column* short. *Anther-thecae* somewhat diverging; pollinia 2, granular, with elongated curved caudicles and exerted naked glands. *Stigma* bipartite, extended in front into a pair of elongate subclavate processes; rostellum 3-lobed. *Capsule* oblong in outline.

Terrestrial herbs with the habit of a large species of *Habenaria*; inflorescence a more or less elongated raceme; bracts ovate.

An African genus of 18 species; 7 species occur in South Africa, extending from the Transvaal into Natal, the Transkei to the Uitenhage district; rare in the south-western districts of the Cape Province. (Type: *B. speciosa* Willd.)

1426 **11. PACHITES** Lindl., Gen. & Sp. Orchid., p. 301 (1835)

Sepals subequal, free, spreading. *Petals* similar to the sepals or rather smaller. *Lip* superior, erect, undivided or 3-lobed, not spurred. *Column* erect. *Anther-thecae* pendulous, separate or approximate at the base; pollinia 2, in separate thecae, with ascending caudicles each attached to a separate gland. *Rostellum* with 2 horn-like appendages. *Ovary* and *pedicel* not twisted.

Terrestrial glabrous herbs resembling a slender species of *Disa* in habit with somewhat thickened roots; leaves linear, cauline, erect; inflorescence a short or cylindric spike; bracts lanceolate.

Endemic; species 2, confined to the south-western districts of the Cape Province. (Type: *P. appressa* Lindl.)

1427 12. FORFICARIA Lindl., Gen. & Sp. Orchid., p. 362 (1835)

Sepals free; odd sepal inferior, spatulate, concave, without a spur. *Petals* somewhat oblique, entire, lanceolate, recurved above the middle, lying on the odd sepal. *Lip* superior, reniform-orbicular, obscurely trilobed and ciliate at the apex. *Anther* suberect, 2-theous, with the thecae distinct and parallel; pollinia solitary in each theca, attached by short caudicles to 2 distinct glands. *Ovary* straight. *Rostellum* produced on each side of the column into adnate ciliate wings.

An erect herb, with several narrow grass-like leaves and a few basal sheaths; inflorescence a slender, somewhat elongated, raceme.

Endemic; species 1, extending from the Worcester to the Knysna districts. (Type: *F. graminifolia* Lindl.)

1428 13. BRACHYCORYTHIS Lindl., Gen. & Sp. Orchids, p. 363 (1838)

Sepals free, connivent or the lateral ultimately spreading; lateral sepals oblique, often broader than the dorsal, sometimes falcate and ascending. *Petals* usually oblique and similar to the dorsal sepal or narrower, incurved over the column. *Lip* continuous with the base of the column, concave or gibbous at the base, 3-toothed or 3-lobed. *Anther* erect; thecae parallel; pollinia 2, with short caudicles attached to separate approximate glands. *Stigma* fleshy, sometimes concave; rostellum short, 3-lobed. *Capsule* narrowly oblong in outline.

Terrestrial herbs with undivided ovoid tubers; leaves sessile, generally numerous and imbricate, gradually decreasing upwards into the bracts; inflorescence a spike or raceme, usually dense and many-flowered; bracts ovate or ovate-lanceolate, often somewhat leafy.

An African genus of 40 species; 5 species occur in South Africa extending from the Transvaal, Zululand, Natal, and the eastern Orange Free State, through the Transkei to the Stockenström district. (Type: *B. ovata* Lindl.)

1430 14. SATYRIUM Sw., Vet. Akad. Handl. Stockholm, vol. 21, p. 214 (1800)

Sepals subequal or the lateral broader, spreading or reflexed. *Petals* more or less united to the sepals at the base, similar to or narrower than the odd or front sepal. *Lip* superior, sessile at the base of the column, erect, galeate or cucullate, more or less united at the base to the lateral sepals, produced behind into a pair of descending spurs or sacs, rarely without a sac. *Column* erect, divided at the apex into 2 lobes. *Anther* hanging under the rostellum or horizontal; thecae nearly parallel; pollinia 2, granular, each with a slender stipes and distinct gland. *Ovary* and *pedicel* not twisted.

Terrestrial herbs, with ovoid or globose tubers; leaves few and basal, sometimes prostrate on the ground or more numerous and cauline, decreasing upwards into the bracts; inflorescence usually a dense or many-flowered spike; bracts membranous, often reflexed after flowering.

Species about 137, mostly African; a few representatives in the Mascarene Islands, India, and South China; 55 species occur in South Africa distributed from the Transvaal, Natal, the eastern Orange Free State, through the coastal belt to the south-western districts of the Cape Province. (Type: *S. bicornis* (L.) Swartz)

1430a 15. SATYRIDIMUM Lindl., Gen. & Sp. Orchid. Pl., p. 345 (1838)

Sepals free, subequal, spreading or reflexed. *Petals* free, rather narrower than the lateral sepals, reflexed. *Lip* superior, sessile at the base of the column,

erect, cucullate, acuminate or rostrate, produced behind into a pair of short oblong descending sacs. *Column* divided at the apex into 2 lobes. *Anther* hanging vertically and nearly free in front of the column; thecae parallel; pollinia 2, granular, each with a slender stipes, united to a single orbicular gland. *Ovary* and *pedicel* not twisted.

An erect glabrous herb, with a few thickened roots; leaves few and subbasal, with a few sheaths on the lower part of the stem, reduced upwards into the bracts; inflorescence a somewhat dense many-flowered spike; bracts membranous, reflexed after flowering.

Endemic; species 1, only recorded from the south-western districts of the Cape Province. (Type: *S. rostratum* Lindl.)

1430b 16. AVICEPS Lindl., Gen. & Sp. Orchid. Pl., p. 345 (1838)

Sepals and *petals* united almost to the apex into a broadly oblong spreading papillose limb. *Lip* superior, erect, cucullate, broadly ovate, acute, produced behind into a pair of sacs or spurs. *Column* erect, divided at the apex into 2 lobes. *Anther* hanging under the rostellum; thecae parallel; pollinia 2, granular, each with a short stipes and distinct gland. *Ovary* and *pedicel* not twisted.

A dwarf glabrous herb, with subovoid tubers; leaves in a basal tuft, spreading; inflorescence a short subcapitate spike and almost included within the tuft of leaves; bracts leaf-like, spreading.

Endemic; species 1, recorded only from the south-western districts of the Cape Province. (Type: *A. pumila* Lindl.)

1431 17. SCHIZOCHILUS Sond., Linnaea, vol. 19, p. 78 (1847)

Sepals free, connivent or ultimately spreading, subequal. *Petals* oblique, smaller than the sepals. *Lip* united to the base of the column, spurred at the base, entire or trifid. *Column* short; stigma near the base of the column. *Anther* erect or slightly reclinate; pollinia 2, in separate thecae; caudicles short; glands distinct. *Capsule* oblong in outline or ovoid, short, straight.

Terrestrial herbs, with subovoid tubers; leaves radical or subradical; the upper reduced to small sheaths; inflorescence a dense spike; bracts narrow, shorter than the flowers.

An African genus of 25 species; 2 species recorded from tropical Africa; the remainder in South Africa, extending from the northern Transvaal, Natal, the eastern Orange Free State, Swaziland, to the Fort Beaufort district. (Type: *S. zeyheri* Sond.)

1432 18. SCHIZODIUM Lindl., Gen. & Sp. Orchid., p. 358 (1838)

Sepals free, more or less spreading, odd sepal superior, with an oblong or narrow spur behind. *Petals* free, often narrow and unequally bilobed at the apex, more or less adnate to the rostellum at the base. *Lip* fiddle-shaped, often narrowed or acuminate in front, sometimes with a filiform appendage. *Anther* reflexed, with 2 parallel thecae; pollinia 2, attached by short caudicles to separate glands. *Rostellum* erect, emarginate or retuse, with short side lobes. *Capsule* obovate-oblong in outline, ribbed.

Terrestrial herbs, with simple thickened tubers; leaves spatulate or elliptic-ovate, in a spreading radical tuft; inflorescence a short or lax raceme; bracts usually ovate-lanceolate.

Endemic; species 9, mostly in the south-western districts of the Cape Province; 1 species found in the Van Rhynsdorp district, and 1 species extends to the Port Elizabeth district.

1433 **19. BROWNLEE** Harv., ex Lindl. in Hook. Lond. Journ. Bot., vol. 1, p. 16 (1842)

Sepals free, more or less spreading; odd sepal superior, hooded, spurred. *Petals* erect, more or less adhering to the inner sides of the mouth of the dorsal sepal and adnate to the column at the base. *Lip* usually narrow or minute, entire, sometimes dilated and clasping the base of the column. *Anther* horizontal or reflexed, with 2 parallel thecae; pollinia 2, solitary in each theca, attached by short caudicles to separate glands. *Rostellum* erect, more or less distinctly bilobed. *Capsule* cylindric or oblong in outline, ribbed.

Terrestrial herbs, with simple sessile tubers, leaves cauline, few to several, usually more or less spreading; inflorescence a dense or lax spike or raceme, rarely the flowers solitary.

An African genus of 19 species; 14 species occur in South Africa, extending from the northern Transvaal, Natal, the eastern Orange Free State, to the George district; the other species found in tropical Africa and Madagascar. (Type: *Brownleea parviflora* Harv. ex Lindl.)

1434 **20. DISA** Berg., Descr. Pl. Cap., p. 348 (1767)

Sepals free; odd sepal superior, concave, hood-shaped or helmet-shaped, with a more or less elongated spur or sac. *Petals* usually much smaller than the sepals, generally more or less adnate to the column at the base. *Lip* anticous, usually small and narrow. *Anther* suberect, horizontal, reclinate or reflexed, 2-theous, with the thecae distinct and parallel; pollinia solitary in each theca, attached by short or long caudicles to 2 distinct glands. *Ovary* twisted. *Rostellum* erect, subentire, bifid or trifid at the apex, sometimes with side processes, often more or less adnate to the base of the petals and sometimes forming a ridge upon them. *Capsule* cylindric, clavate, or narrowly ellipsoid.

Terrestrial herbs, with simple sessile tubers; leaves radical or cauline; inflorescence a corymb, raceme, or a lax or dense spike, rarely the flowers solitary.

Species about 127, natives of Africa and Madagascar; 81 species recorded from South Africa, extending from Zululand and Natal along the coastal belt to the Clanwilliam district; also found in the northern Transvaal and the eastern Orange Free State. (Type: *Disa uniflora* Berg.)

1434a **21. ORTHOPENTHEA** Rolfe, Fl. Cap., vol. 5, pt. 2, p. 179 (1913)

Sepals free; odd sepal inferior, expanded and horizontal, concave, saccate or with a short spur. *Petals* reflexed, more or less adnate to the column at the base. *Lip* superior, oblong, narrow, trowel-shaped or broadly elliptic, without a spur. *Column* short. *Anther* horizontal or reflexed, 2-theous, with the thecae distinct and parallel; pollinia 2, solitary in each theca, granular, attached by short caudicles to 2 distinct glands. *Ovary* straight, rarely twisted. *Rostellum* erect, bifid or trifid. *Capsule* oblong in outline or cylindric.

Terrestrial herbs, with simple sessile tubers; leaves cauline or radical; the upper leaves often reduced and sheath-like; inflorescence usually a corymb or short spike, rarely the flowers subsolitary; bracts usually narrow, rarely sheathing.

Endemic; species 10, found in the south-western districts of the Cape Province; 1 species extends to the Knysna district. (Type: *O. bivalvata* Rolfe)

1434b **22. AMPHIGENA** Rolfe, Fl. Cap., vol. 5, pt. 2, p. 197 (1913)

Sepals free; odd sepal superior, galeate, with a conical obtuse spur. *Petals* erect, included within the galea, somewhat oblique, serrulate on the front

margin. *Lip* anticus, small and narrow, entire, without a spur. *Column* short. *Anther* much reflexed; thecae distinct and parallel; pollinia 2, granular, attached by short caudicles to a single large nearly square gland. *Ovary* twisted. *Capsule* narrow.

Terrestrial herbs, with rather large irregular tubers; leaves narrow, grass-like, springing from a basal sheath and appearing before the flowers, soon withering; inflorescence a narrow cylindric spike on slender wiry scapes; bracts small, narrow.

Endemic; species 2, recorded from the south-western districts of the Cape Province. (Type: *A. leptostachya* Rolfe)

1434c **23. PENTHEA** Lindl. *Introd. Nat. Syst.*, ed. 2, p. 466 (1836);
Gen. & Sp. Orchid., p. 362 (1838)

Sepals free; odd sepal superior, spatulate, flat or concave, without a spur. *Petals* oblique, with a small basal auricle. *Lip* inferior, narrowly linear. *Anther* suberect, 2-thecous, with the thecae distinct and parallel; pollinia 2, solitary in each theca, attached by short caudicles to 2 distinct glands. *Ovary* twisted. *Rostellum* 3-partite.

Terrestrial herbs, with subovoid tubers; leaves radical or cauline, reduced upwards into the bracts; inflorescence a short corymb.

Endemic; species 2, recorded from the south-western districts of the Cape Province. (Type: *P. patens* (Sw.) Lindl.)

1435 **24. HERSCHELIA** Lindl., Gen. & Sp. Orchid., p. 362 (1838)

Sepals free, odd one superior, galeate, ascending, with a short broadly conical spur. *Petals* erect, included within the galea, unequally and deeply bilobed. *Lip* anticus, sessile or long-stalked, deeply fringed, crenate, or subentire or dilated and variously lobed at the apex. *Column* short. *Anther* much reflexed; thecae distinct and parallel; pollinia 2, granular, attached by short caudicles to a large single gland (occasionally with 2 glands in *H. lugens*). *Ovary* twisted; rostellum sometimes 3-toothed at the apex. *Capsule* clavate or narrowly oblong in outline.

Terrestrial herbs, with large ovoid irregular tubers and narrow grass-like radical leaves; inflorescence a short or somewhat elongated raceme on slender wiry scapes; bracts usually narrow.

An African genus of 16 species; 15 species occur in South Africa, extending from the Clanwilliam district along the coast to Tembuland; also recorded from the northern Transvaal. (Type: *H. coelestis* Lindl.)

1436 **25. MONADENIA** Lindl., Gen. & Sp. Orchid., p. 356 (1838)

Sepals free; the odd sepal superior, hood-shaped, with an oblong or cylindric spur; lateral sepals spreading. *Petals* erect, entire or bilobed. *Lip* anticus, usually small and narrow, without a spur. *Column* short. *Anther* erect or reclinate, 2-thecous, with the thecae distinct and parallel; pollinia 2, solitary in each theca, granular, attached by short or long caudicles to a single gland. *Ovary* twisted; rostellum erect, subentire, emarginate or 3-lobed. *Capsule* oblong or elliptic-oblong in outline.

Terrestrial herbs, with simple sessile tubers; leaves usually cauline and gradually reduced upwards or the lower subradical and the upper reduced to short sheaths; inflorescence usually a dense cylindric spike, sometimes somewhat lax or spike short; bracts usually narrow or narrowed from a broader base.

Endemic; species 11, mostly in the south-western districts of the Cape Province but also recorded from the coastal area to Natal; also recorded from the northern Transvaal and 1 species from Namaqualand.

1437 26. DISPERIS Sw., Vet. Acad. Nya Handl. Stockholm, vol. 21, p. 218 (1800)

Dorsal sepal erect, hooded or spurred; lateral sepals oblique, dorsally saccate or spurred about the middle. *Petals* oblique, falcately curved, united to the margins of the dorsal sepal, sometimes auriculate on the free margin near the base. *Lip* ascending along the face of the column and adnate to it, narrowed into a claw below, dilated above into a variously shaped limb, bearing on its face a variously shaped appendage directed towards the apex of the dorsal sepal and sometimes incurved towards its mouth. *Column* erect, usually stout; rostellum large, membranous, produced in front into 2 rigid cartilaginous diverging arms holding at their extremities the glands of the pollinia. *Anther-thecae* distinct; pollinia with the granules usually large and secund in a double row on the margin of the flattened caudicles which curl up in a spiral on removal, attached to separate glands. *Capsule* cylindric or subovoid, ribbed.

Terrestrial herbs, with ovoid tubers; leaves one to few, alternate or sometimes in a single opposite pair or solitary; flowers solitary or inflorescence a raceme; bracts sometimes large and leaf-like.

Species about 69, natives of Africa, India, New Guinea, and the Mascarene Islands; 37 species recorded from South Africa, extending from the Stutterheim district through the coastal belt to Natal; also recorded from the eastern Orange Free State and the northern Transvaal. (Type: *D. secunda* Sw.)

1438 27. PTERYGODIUM Sw., Vet. Acad. Nya Handl. Stockholm, vol. 21, p. 217 (1800)

Sepals free, spreading, ascending or reflexed; odd sepal superior, more or less concave. *Petals* oblique and united to the margins of the dorsal sepal into a more or less flattened hood. *Lip* united to the face of the column, narrowed into a claw below, dilated into a reflexed undivided variously shaped limb above, produced above the junction with the column into a large variously shaped fleshy appendage. *Column* short, dilated, produced in front into 2 horizontal arms, holding at their extremities the glands of the pollinia. *Anther-thecae* more or less distant; pollinia solitary in each theca attached to separate glands by caudicles; caudicles and glands uppermost. *Capsule* cylindric or obovoid, with prominent ribs.

Terrestrial herbs, with small undivided sessile tubers; leaves cauline; inflorescence a dense or sometimes lax spike; bracts lanceolate or ovate-lanceolate.

An African genus of 16 species; 14 species occur in South Africa extending from the Clanwilliam district to the Transkei; also recorded from the eastern Orange Free State. (Type: *P. catholicum* Sw.)

1438a 28. OMMATODIUM Lindl., Gen. & Sp. Orchid., p. 365 (1838)

Sepals free, spreading, ovate; odd sepal superior, nearly flat. *Petals* obcordately bilobed, united with the dorsal sepal into a broad spreading hood which is strongly inflexed at the oblique apex. *Lip* adnate to the face of the column below, with a broadly triangular-hastate limb with a tooth-like fold on either side near the base and with an erect obovate and denticulate appendage. *Column* broadly dilated, produced in front into 2 oblong spreading arms. *Anther-thecae* distant; pollinia solitary in each theca, attached to a short caudicle and a rounded gland. *Stigmas* 2, cushion-shaped, situated at the base of the appendage. *Capsule* oblong in outline, ribbed.

Terrestrial herb, with small undivided sessile tubers; leaves few, radical or subradical; inflorescence a somewhat dense erect spike; bracts ovate, spreading or reflexed.

Endemic; species 1, extending from Namaqualand to the Swellendam district. (Type: *O. volucris* Lindl.)

1438b **29. ANOCHILUS** Rolfe, Fl. Cap., vol. 5, sect. 3, p. 280 (1913)

Sepals free, spreading or reflexed; odd sepal inferior, more or less concave. *Petals* oblique, more or less adnate to the dorsal sepal into a large concave limb. *Lip* superior, united to the face of the column, narrowed into a claw below, dilated into a broad incurved or reflexed limb above, produced above the junction with the column into a large deflexed somewhat bilobed appendage. *Column* short, dilated, produced in front into 2 short broadly rounded or oblong spreading arms carrying the glands of the pollinia. *Anther-thecae* more or less distant; pollinia solitary in each theca, attached by caudicles to separate glands; caudicles and glands uppermost. *Capsule* oblong in outline, ribbed.

Terrestrial herbs, with small undivided tubers; leaves cauline; inflorescence a dense erect spike; bracts ovate or ovate-lanceolate.

Endemic; species 2; one species extending from Namaqualand to the Caledon district, the other found in the Molteno district. (Type: *A. inversum* Rolfe)

1439 **30. CERATANDRA** Eckl., ex Bauer, Ill. Orch. Gen., t. 16 (1837)

Odd sepal inferior, deflexed, concave; lateral sepals approximate or connivent at the margin into a broad limb and erect behind the lip. *Petals* narrow, concave, united with the dorsal sepal into a concave deflexed limb. *Lip* superior, adnate to the column, broadly cordate or auriculate below, with an ovate-oblong truncate fleshy appendage about the middle. *Column* produced upwards into a pair of suberect oblong rostellary arms holding at their apex the glands of the pollinia. *Pollinia* coarsely granular, didymous, attached by long slender caudicles to broad glands. *Stigmas* 2, cushion-shaped, situated on the face of the column near the base. *Capsule* oblong in outline, ribbed.

A stout terrestrial herb; leaves numerous, cauline; inflorescence a dense oblong spike or raceme; bracts linear.

Endemic; species 1, extending from the Piquetberg to the Knysna district. (Type: *C. chloroleuca* Eckl. ex Bauer)

1439a **31. CERATANDROPSIS** Rolfe, Fl. Cap., vol. 5, sect. 3, p. 266 (1913)

Odd sepal superior; lateral sepals free, somewhat spreading. *Petals* somewhat oblique, united with the dorsal sepal into a concave spreading limb more or less auriculate at the base. *Lip* inferior, adnate to the column, with a broadly cordate-ovate limb, without an appendage. *Column* produced upwards into a pair of broad diverging arms. *Pollinia* 2, solitary in each anther-theca, attached by a slender stipes to a broad rounded gland. *Stigma* somewhat bilobed. *Capsule* oblong in outline, ribbed.

Stout erect herbs; leaves numerous, cauline, narrow; inflorescence a short oblong or subcapitate spike; bracts linear.

Endemic; species 2, extending from the Clanwilliam to the Albany district. (Type: *C. grandiflora* Rolfe=*Ceratandra grandiflora* Lindl.)

1439b **32. EVOTA** Rolfe, Fl. Cap., vol. 5, sect. 3, p. 268 (1913)

Sepals free, spreading; odd sepal superior, concave. *Petals* united with the dorsal sepal into a broad spreading limb. *Lip* inferior, adnate to the face of the column, with a half-moon-shaped or bilobed limb and with a large

subquadrate or bilobed fleshy appendage. *Column* short; arms of the rostellum laterally dilated, not elongated. *Pollinia* solitary in each anther-theca, attached by a slender stipes to a single gland. *Stigma* cushion-shaped or bilobed, situated at the base of the column. *Capsule* oblong in outline, ribbed.

Slender erect herbs, with fleshy roots; leaves radical and cauline; inflorescence a lax or somewhat dense raceme; bracts ovate.

Endemic; species 3, confined to the south-western districts of the Cape Province. (Type: *E. harveyana* Rolfe=*Ceratandra harveyana* Lindl.)

1440 **33. CORYCIUM** Sw., Vet. Acad. Nya Handl. Stockholm, vol. 21, p. 220 (1800)

Sepals free or sometimes united; odd sepal erect, narrow, concave. *Petals* oblique, falcately curved and united to the margins of the dorsal sepal into a hood, usually somewhat contracted in front, concave or obliquely saccate at the base. *Lip* ascending along the face of the column and adnate to it, narrowed into a claw below, dilated above into a reflexed transversely lunate or bilobed more rarely oblong or lanceolate limb, produced at the junction with the column into a large reflexed or erect variously shaped fleshy appendage. *Column* short, dilated, produced in front into 2 horizontal arms holding at their extremities the glands of the pollinia. *Anther-thecae* more or less distant; pollinia attached by caudicles to separate glands; glands uppermost. *Capsule* elliptic or oblong in outline, usually much narrowed above, ribbed.

Terrestrial herbs, with undivided sometimes stalked tubers; leaves radical and cauline, flat or sometimes crisped; inflorescence an erect often dense spike; bracts lanceolate.

Endemic; species 15, extending from Namaqualand, through the coastal belt to Natal, the eastern Orange Free State, and the northern Transvaal.

1464 **34. POGONIA** Juss., Gen., p. 65 (1789)

Sepals subequal, free, erect or rarely spreading. *Petals* similar to the sepals or often broader or shorter. *Lip* erect from the base of the column, entire or 3-lobed (in the South African species), with the side lobes enfolding the column; disc variously crested or lamellate. *Column* elongated, slightly clavate at the apex. *Anther* somewhat stipitate, more or less incumbent, imperfectly 2-thecous; pollinia 2, sometimes confluent into 1, not tailed, free or sessile on the rostellum. *Stigma* oblong or broad.

Terrestrial herbs; rhizomes tuberiferous; leaves one to few, often not appearing until after the flowers; inflorescence an erect or pendulous raceme or flowers solitary.

Species about 97, widely dispersed through the tropics with a few temperate representatives in North and South America and in Japan; 1 species occurs in the Transvaal. (Type: *P. ophioglossoides* Ker-Gawl.=*Arethusa ophioglossoides* L.)

1502 **35. ZEUXINE** Lindl., Orchid. Scel., p. 9 (1826)

Sepals subequal; dorsal sepal erect, concave; lateral sepals spreading, free. *Petals* narrow, often cohering with the dorsal sepal to form a hood. *Lip* very shortly adnate to the base of the column, concave or subsaccate at the base, with or without a pair of calli inside, more or less contracted in the middle, dilated at the apex into a small entire or larger 2-lobed spreading limb. *Column* very short. *Anther* erect or inclined in front, shortly apiculate; pollinia granular, 2, affixed to a linear or cuneate stipes, with a broad rounded gland. *Stigmas* 2, lateral. *Capsule* small, erect, ovoid or subglobose.

Slender or dwarf terrestrial herbs, with short creeping rhizomes; leaves sessile, linear on a broad sheath or petioled with an ovate or lanceolate limb; inflorescence a dense or slender spike; bracts membranous, mostly shorter than the flowers.

Species about 69, mostly Indian and Malayan, with a few tropical African representatives; 1 species occurs in Natal.

1516 **36. PLATYLEPIS** A. Rich., Mém. Soc. Hist. Nat. Paris, vol. 4, p. 34, t. 6 (1828)

Sepals subequal, free, connivent round the column; lateral sepals united at the base into a very short chin. *Petals* narrow, slightly cohering with the dorsal sepal into a hood. *Lip* sessile at the base of the column. *Column* elongated, subterete. *Anther* erect, acuminate, as long as the rostellum; thecae distinct; pollinia 2, attached to a minute gland by 2 stipes. *Stigmas* broad, papillose; rostellum erect, 2-lobed, with lanceolate acuminate lobes. *Capsule* oblong in outline, shortly contracted at the apex.

Terrestrial herbs, with creeping rhizomes; leave petioled, ovate or ovate-lanceolate; inflorescence a dense spike; bracts ovate.

Species 14, natives of Africa, the Mascarene Islands, and Madagascar; 1 species found in Natal. (Type: *P. goodyeroides* A. Rich.=*P. occulta* (Thou.) Reichb. f.)

1531a **37. CORYMBIS** Thouars, Hist. Pl. Orchid., t. 37 (1822)

Sepals narrow and approximate below, somewhat spreading above. *Petals* similar to the sepals. *Lip* erect from the base, linear, channelled and dilated at the apex into a short recurved limb. *Column* elongated, terete, clavate at the apex, terminating in 2 erect lobes or auricles. *Anther* erect, acuminate, about as long as the column; pollinia granular, affixed to a subulate stipes with a peltate gland, descending behind the rostellum. *Capsule* subterete, linear in outline, crowned with the column and the remains of the persistent perianth.

Tall erect terrestrial herbs, with leafy sometimes branched stems and numerous fibrous roots; leaves large, elliptic-lanceolate, acute, plicate-veined, enlarged at the base into an amplexicaul sheath; inflorescence an axillary or terminal panicle or raceme, subcorymbose.

Species about 17, widely dispersed through the tropics; 1 species found in Pondoland and also recorded from tropical Africa. (Type: *C. corymbosa* Thouars)

1556 **38. LIPARIS** L. C. Rich., Mém. Mus. Paris, vol. 4, pp. 43, 52 (1818)

Sepals spreading, free or the lateral more or less connate and often falcate and broader than the dorsal. *Petals* usually very narrow. *Lip* inferior, adnate to the base of the column, usually deflexed or recurved above the erect base, entire, often bituberculate at the base. *Column* usually long and slender, incurved, usually marginate or winged at the apex. *Anther* terminal; pollinia 4, free or cohering by a viscid appendage.

Terrestrial or rarely epiphytic herbs, with or without pseudobulbs; leaves one or more, membranous and continuous with the sheath or somewhat coriaceous and jointed to the sheath or pseudobulb; inflorescence a lax or dense raceme; flowers small or medium-sized; bracts small or narrow.

Species about 300, found throughout the warm and temperate regions of the globe, but most numerous in tropical Asia; 3 species occur in South Africa, extending from Natal through the coastal region to the south-western districts of the Cape Province. (Type: *L. loeselii* (L.) L. C. Rich.)

- 1561** **39. ACROLOPHIA** Pfitz., Entw. Anordn. Orchid., p. 59 (1887);
Engl. et Prantl Pflanz. Fam., vol. 2, pt. 6, p. 132 (1889)

Sepals subequal, free, subconnivent or spreading; the lateral not adnate to the foot of the column. *Petals* like the sepals or a little broader, similar in colour or somewhat paler. *Lip* continuous with the base of the column, 3-lobed or sometimes entire above, generally saccate or spurred at the base, very rarely without a spur; disc variously papillose or crested. *Column* short, clavate, not produced into a foot at the base. *Anther* terminal, operculate, semiglobose, conical or 2-horned above, imperfectly 2-theous; pollinia 4, united in pairs, affixed to a broad stipes and gland. *Capsule* ovoid or oblong, with prominent thickened angles.

Terrestrial herbs; stems leafy at the base, not thickened into rhizomes; leaves in a more or less distichous basal tuft, coriaceous and persistent, plicate; inflorescence usually a panicle, more rarely a raceme; scape terminal; bracts small or narrow.

Endemic; species 12, mostly confined to the south-western districts of the Cape Province but extend into the Transkei.

- 1565** **40. POLYSTACHYA** Hook., Exot. Fl., t. 103 (1825)

Sepals connivent or somewhat spreading; dorsal sepal free; lateral sepals adnate to the foot of the column. *Petals* usually narrower than the dorsal. *Lip* superior, articulated to the foot of the column, 3-lobed or entire from a cuneate base. *Column* usually short, very broad, not winged, produced into a long foot at the base. *Anther* terminal, very convex, 1-theous or imperfectly 2-theous; pollinia 4, waxy, broadly ovate, sometimes united in pairs, affixed to a short stipes and gland. *Capsule* oblong in outline or fusiform, sometimes elongated.

Epiphytic herbs (or rarely terrestrial?); stems often short, sometimes thickened into pseudobulbs, mostly leafy; leaves distichous, contracted into sheaths at the base; inflorescence terminal, a panicle or raceme, with a few sheaths below; bracts small.

Species about 185, widely diffused through the tropics; the great majority African; 11 species occur in South Africa, extending from Natal through the coastal belt to the Knysna district. (Type: *P. luteola* Hook. = *P. minuta* (Aubl.) Britton)

- 1568** **41. ANSELLIA** Lindl., Bot. Reg., vol. 30, sub. t. 12 (1844)

Sepals subequal, free, spreading. *Petals* similar to the sepals. *Lip* articulated to the foot of the column, 3-lobed; disc with 2—3 parallel keels. *Column* erect, semi-terete, with acute margins; base produced into a very short broad concave or slightly 2-lobed foot. *Anther* terminal, convex or crowned with an obtuse conical appendage, imperfectly 2-theous; pollinia 2 or 4, confluent in pairs, waxy, ovate, attached to a short broad stipes and gland. *Capsule* oblong in outline, without a beak.

Epiphytic herbs; stems tall, thickened or somewhat fusiform, leafy; leaves distichous, plicate-veined; inflorescence a terminal panicle, more or less branched; flowers pedicellate, yellow, more or less blotched with brown; bracts small.

An African genus of 6 species; 1 species occurs in the northern Transvaal and Natal. (Type: *A. africana* Lindl.)

- 1631** **42. CALANTHE** R. Br., Bot. Reg., vol. 7, sub. t. 573 (1821)

Sepals subequal, free, usually widely spreading. *Petals* similar to the sepals or narrower. *Lip* usually more or less adnate to the column; limb spreading, 3-lobed, with the front lobe 2-lobed; disc variously crested or lamellate; base mostly extended into a slender spur. *Column* short, without a foot;

wings usually united to the sides of the column. *Anther* subterminal, operculate, incumbent, 2-theous; pollinia 8, oblong or obovate, somewhat compressed; caudicles often somewhat attenuate and united by a viscid appendage. *Capsule* elliptic-oblong in outline.

Terrestrial herbs, with short leafy stems, sometimes thickened at the base; leaves two to several, petiolate; limb elliptic to oblong-lanceolate, acute or acuminate, plicate; inflorescence a loose or dense raceme, usually showy; scapes erect from the rhizome, often tall, with a number of sheaths towards the base; bracts lanceolate or ovate-lanceolate.

Species about 200, most numerous in tropical Asia, extending to Japan and Australia and sparingly represented in Africa, the West Indies, and central America; 1 species found in Zululand, Natal, and the Perie Forest. (Type: *C. veratrifolia* (Willd.) R. Br.)

1647 43. LISSOCHILUS R. Br., Bot. Reg., vol. 7, t. 573 (1821)

Sepals subequal, free, spreading or reflexed; the lateral sepals sometimes adnate to the foot of the column. *Petals* erect, generally much larger and broader than the sepals and differently coloured. *Lip* continuous with the foot of the column, more or less distinctly 3-lobed; base variously saccate or spurred; disc variously cristate, lamellate, or sometimes smooth. *Column* erect, clavate, more or less produced into a foot at the base. *Anther* terminal, semi-globose, conical or more or less bilobed at the apex, imperfectly 2-theous; pollinia 4, united in pairs and affixed to a broad stipes and gland. *Capsule* oblong or somewhat linear in outline, with prominent thickened angles.

Terrestrial herbs; stems creeping, often thickened into rhizomes or tubers, leafy at the base; leaves plicate; inflorescence a loose raceme; bracts small or narrow.

Species about 140, mostly African; a few species in the Mascarene Islands; 17 species in South Africa, extending from the northern Transvaal and Natal to the Uitenhage district. (Type: *L. speciosus* R. Br.)

1648 44. EULOPHIA R. Br. ex Lindl., Bot. Reg., vol. 8, t. 686 (1823)

Sepals subequal, free, subconnivent or spreading; the lateral sepals sometimes adnate to the foot of the column. *Petals* like the sepals or a little broader, sometimes differently coloured. *Lip* continuous with the base or foot of the column, 3-lobed or entire, base usually variously saccate or spurred; disc variously cristate or lamellate, rarely smooth. *Column* sometimes produced into a more or less distinct foot at the base. *Anther* terminal, semi-globose, conical or rarely acuminate, more or less bilobed at the apex, imperfectly 2-theous; pollinia 4, ovoid, united in pairs, affixed to a broad stipes and gland. *Capsule* ovoid or oblong in outline, rarely elongated, with prominent thickened angles.

Terrestrial herbs or rarely epiphytes; stems leafy at the base, creeping, often thickened into rhizomes, sometimes forming aerial pseudobulbs; leaves distichous, usually plicate; inflorescence a raceme, rarely a panicle; scape lateral; bracts small or narrow.

Species over 300, chiefly in tropical and subtropical regions of the Old World, with the headquarters in Africa; about 86 species in South Africa extending from the northern Transvaal and Natal to the Uitenhage district; rare in the southwestern districts of the Cape Province. (Type: *E. guineensis* Lindl.)

1707 45. MEGACLINIUM Lindl., Bot. Reg., vol. 12, t. 989 (1826)

Sepals free; dorsal sepal erect or spreading, longer than the lateral sepals; lateral sepals falcate or reflexed about the middle, at the base adnate to the

foot of the column. *Petals* smaller and narrower than the dorsal sepal, often very narrow. *Lip* articulated at the foot of the column, mobile, inflexed at the base, recurved above, entire or denticulate at the base, rarely somewhat 3-lobed. *Column* short, broadly dilated and winged at both sides, terminating above in acute or rounded teeth, base produced into a short foot. *Anther* terminal, operculate, incumbent, 2- or rarely 1-theous; pollinia waxy, normally 4, but usually connate in pairs, without appendages.

Epiphytic herbs, with stout creeping rhizomes; pseudobulbs sessile in the axil of a sheath, mostly 3—5-angled, 2- or 1-leaved; scapes arising from the base of the pseudobulbs, simple; apex dilated into a flattened often ensiform and almost foliaceous rhachis along either side of which flowers and bracts are distichously arranged; bracts usually ovate or triangular, ultimately much deflexed; flowers small, pedicelled, curved.

Species about 46, mostly tropical African; 2 species in South Africa, extending from the northern Transvaal, through Natal to Pondoland. (Type: *M. falcatum* Lindl.)

1828 46. ANGRAECUM Bory, Voy. Illes Afr., vol. 1, p. 359, t. 19 (1804)

Sepals subequal, spreading or connivent. *Petals* similar to the sepals. *Lip* affixed to the base of the column and continuous with it, produced at the base into an elongated or saccate spur, entire or 3-lobed. *Column* very short, broad, concave in front, without wings or foot. *Anther* terminal, operculate, convex, often produced in front, scarcely 2-theous; pollinia 2; stipe single, clavate or slender; gland squamiform, simple. *Capsule* oblong in outline or fusiform.

Epiphytic herbs; stems leafy or rarely leafless, not thickened into pseudobulbs; leaves when present distichous, coriaceous or fleshy, articulated to a persistent sheath, often more or less obliquely 2-lobed at the apex; inflorescence lateral, a raceme or sometimes flowers solitary.

Species about 227, widely diffused in Africa and Madagascar, with a few outlying species in China, Japan, and the Philippine Islands; 13 species in South Africa, extending from the northern Transvaal, through Zululand and Natal to the Swellendam district. (Type: *A. eburneum* Bory)

1835 47. LISTROSTACHYS Reichb. f., Bot. Zeit., vol. 10, p. 930 (1852)

Sepals subequal, free, spreading or subconnivent. *Petals* similar to the sepals. *Lip* affixed to the base of the column and continuous with it, produced at the base into a cylindric spur, entire or obscurely 3-lobed. *Column* very short, concave in front. *Anther* terminal, convex, often produced in front, scarcely 2-theous; pollinia 2, globose, situated upon a pair of usually slender stipes, distinct or only united at the base, attached to a variously shaped gland. *Capsule* oblong in outline or fusiform.

Epiphytic herbs; stems leafy, not thickened into pseudobulbs; leaves distichous, articulated to a persistent sheath; inflorescence lateral, a raceme or head.

Species about 86, found in Africa and the Mascarene Islands; 1 species occurs in South Africa, extending from the northern Transvaal, through Natal to the Knysna district.

1837 48. MYSTACIDIUM Lindl. in Hook. Comp. Bot. Mag., vol. 2, p. 205 (1836)

Sepals subequal, free, spreading or connivent. *Petals* similar to the sepals. *Lip* affixed to the base of the column and continuous with it, produced at the base into a short or long spur, generally entire. *Column* very short,

broad, concave in front. *Anther* terminal, operculate, convex, often produced in front, scarcely 2-theous; pollinia 2, globose, situated on a slender pair of stipes which are attached to separate oblong or squamiform glands. *Capsule* oblong in outline or fusiform.

Epiphytic herbs; stems leafy, not thickened into pseudobulbs; leaves distichous, articulated to a persistent sheath; inflorescence lateral, a raceme or flowers solitary.

Species about 61, found in Africa and the Mascarene Islands; a single representative in Ceylon; 11 species occur in South Africa and found in forests from Natal to the Knysna district. (Type: *M. filicorne* Lindl.)

35. PIPERACEAE

Flowers bisexual or unisexual. *Perianth* none. *Stamens* 2—6, hypogynous; filaments usually free; anthers often articulated on the filaments, with 2 distinct or confluent thecae. *Ovary* superior, 1-chambered, with a single erect ovule; stigmas 1—5, short. *Fruit* baccate, with a succulent thin or dry pericarp. *Seed* globose, ovoid, or oblong in outline; testa usually membranous or rather fleshy; endosperm small; perisperm copious, starchy; embryo minute.

Herbs or shrubs, erect or scandent; leaves usually alternate and entire, rarely opposite or verticillate; stipules 0 or adnate to the petiole; inflorescence usually a dense spike or spikes umbellate; flowers minute, each subtended by a peltate bract.

Genera about 8, with over 3,000 species spread through the warmer regions of both hemispheres.

Shrubs; stamens 2—6; anther-thecae usually distinct; stigmas 2—4

1. *Piper* Linn.

Herbs; stamens 2; anther-thecae usually confluent; stigma 1

2. *Peperomia* Ruiz. & Pav.

1862

1. *PIPER* Linn. Sp. Pl., ed. 1, p. 28 (1753)

Flowers bisexual or unisexual. *Perianth* 0. *Stamens* 2—4, rarely more; filaments short; anther-thecae usually distinct. *Ovary* sessile, obtuse or rostrate; stigmas 2—4, distinct, erect or recurved. *Fruit* usually globose, often immersed in a succulent rhachis, more rarely stalked.

Erect or scandent shrubs; branches jointed at the nodes; leaves alternate, entire, equal or unequal at the base, penninerved; stipules adnate to the petiole or connate into a leaf-opposed sheath; inflorescence usually a dense cylindric spike, rarely a raceme, terminal or opposite the leaves; flowers usually sessile.

Over 2,000 species described, spread through the warmer regions of both hemispheres; 2 species occur in South Africa, extending from the northern Transvaal and Natal to the Swellendam district. (Type: *P. nigrum* Linn.)

1866

2. *PEPEROMIA* Ruiz. & Pav., Fl. Peruv. et Chil. Prodr., p. 8 (1794)

Flowers bisexual. *Perianth* 0. *Stamens* 2; filaments short; anther-thecae 2, usually confluent. *Ovary* sessile, obtuse or acute; stigma unidivided, often penicillate. *Fruit* minute.

Annual or perennial herbs, sometimes climbing; leaves alternate, opposite, or verticillate, entire, penninerved or 3-nerved; stipules 0; inflorescence a spike, terminal or opposite the leaves, solitary or several together; bracts sessile, usually peltate.

Species over 1,000, spread through the warmer regions of both hemispheres, concentrated in America; 5 species in South Africa, extending from the northern Transvaal, through the coastal area to the Cape.

36. SALICACEAE

Plants dioecious. *Perianth* 0. *Disc* cup-shaped or reduced to scales. *Male flowers*:—*Stamens* 2 to many; filaments free or more or less united; anthers small, ovate or oblong, opening by 2 longitudinal slits. *Ovary* rudimentary or 0. *Female flowers*:—*Ovary* superior, sessile or shortly stalked, 1-chambered, with many ovules on 2—4 parietal placentas; style 2—4-fid; stigmas 2—4, short, thick, emarginate or 2-fid. *Fruit* a capsule, oblong in outline or ovoid, often acuminate, dehiscent by 2—4 valves. *Seeds* many, small, with a basal tuft of hairs; endosperm none.

Trees or shrubs; leaves deciduous, alternate, entire, toothed, more rarely lobed; stipules free, sometimes small and deciduous, sometimes foliaceous and long persistent; flowers in erect or pendulous spikes or catkins; bracts membranous, fugacious or persistent, each subtending a flower.

Genera 2, with almost 2,000 species described, mostly native of the temperate and cold northern hemisphere.

1873 SALIX Linn., Sp. Pl., ed. 1, p. 1015 (1753)

Flowers unisexual. *Perianth* 0. *Disc* reduced to 1 or several scales, sometimes cohering at the base. *Male flowers*:—*Stamens* 2 or in a few species 3 to many. *Female flowers*:—*Ovary* sessile or stalked; ovules often 4—8, arranged on 2 placentas; style often short, with 2 short retuse or 2-fid branches. *Capsule* 2-valved. *Seed* woolly.

Trees or shrubs; leaves often small or narrow, entire or serrulate; stipules various; catkin often erect, dense.

Described species over 1,000, mostly natives of the northern hemisphere; 10 species have been described from South Africa, found widely distributed over the whole Union. (Type: *S. pentandra* Linn.)

37. MYRICACEAE

Plants monoecious. *Perianth* 0. *Male flowers*:—*Stamens* 2 to many, often 4—6; filaments short, free or more or less cohering; anthers erect, ovate, opening by 2 longitudinal slits. *Ovary* rudimentary. *Female flowers*:—*Perianth* 0. *Ovary* sessile, 1-chambered, with 1 basal erect ovule; style short; stigmas 2, filiform or rarely abbreviated. *Fruit* a drupe, globose or ovoid, usually warted, often waxy. *Seed* with a thin coat; endosperm 0.

Trees or shrubs, often aromatic; leaves alternate, entire, serrate, irregularly toothed or lobed or pinnatifid; stipules 0; flowers in spikes, usually surrounded by 2—6 bracteoles; male spikes often dense, sometimes panicled, sometimes with male flowers below and female flowers above; female spike longer or shorter than the male spikes.

Genus 1, with about 56 species, natives of the temperate and warm regions.

1874 1. MYRICA Linn., Sp. Pl., ed. 1, p. 1024 (1753)

Characters of the family.

Species in South Africa 16, found chiefly in the south-western and south-eastern districts of the Cape Province, but generally extending from the Clanwilliam district to Natal and the Transvaal. (Type: *M. gale* Linn.)

38. ULMACEAE

Flowers bisexual or unisexual. *Perianth* 4—8-lobed, persistent, with the lobes imbricate. *Stamens* 4—8, rarely more, free, opposite to the calyx-lobes; anthers 2-theous. *Ovary* superior, rudimentary or abortive in the male flowers, 1—2-chambered, often surrounded at the base with a ring of hairs; ovules solitary, pendulous from near the top of the ovary-chamber; styles 2, terminal, subulate or stoutly filiform, divergent, stigmatose on their inner face. *Fruit* dry or thinly fleshy, often winged or appendiculate. *Seeds* pendulous; endosperm 0; embryo straight; cotyledons flat, sinous or conduplicate.

Trees or shrubs, spiny or unarmed; leaves alternate, simple, often unequal-sided, usually 3-nerved at the base; stipules paired, caducous; flowers in small axillary cymes or clusters or solitary, pedicellate.

Genera 9; species about 100, widely distributed, but mostly in north temperate zone.

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|--|-----------------------------|---|
| 1. Leaf margins entire; thorns present ... | 3. <i>Chaetacme</i> Planch. | |
| Leaf margins not entire; if sometimes entire, then thorns absent ... | | 2 |
| 2. Pedicels of female flowers $\frac{1}{4}$ — $\frac{3}{4}$ in. long | 1. <i>Celtis</i> Linn. | |
| Pedicels of female flowers about $\frac{1}{16}$ in. or less long | 2. <i>Trema</i> Lour. | |

1898

1. *CELTIS* Linn., Sp. Pl., ed. 1, p. 1043 (1753)

Flowers bisexual or unisexual. *Perianth-segments* 4—5, spreading. *Stamens* 4—5, opposite the perianth-segments. *Ovary* superior; stigmas sessile, filiform or subulate, very stout, widely spreading or ascending. *Seed* without endosperm; cotyledons broad.

Trees or shrubs, unarmed or spiny; leaves alternate, stipulate; stipules lateral, free, deciduous; flowers in small axillary clusters or solitary.

Species about 80, widely distributed in tropical and temperate regions; 2 species in South Africa extending from the Transvaal, Basutoland, Natal to the Port Elizabeth district. (Type: *C. australis* Linn.)

1902

2. *TREMA* Lour., Fl. Cochinch., p. 562 (1790)

Flowers unisexual. *Perianth-segments* usually 5, rarely 4, subequal or the outer slightly smaller. *Stamens* 5, rarely 4; filaments shorter than the perianth-segments. *Ovary* sessile, surrounded by a ring of hairs at the base; stigmas filiform or subulate. *Seed* with endosperm; cotyledons narrow.

Trees or shrubs, without stinging hairs or spines; leaves alternate, stipulate, often 3-nerved at the base; stipules lateral, free, deciduous; flowers in small dense axillary cymes or clusters.

Species about 50, widely distributed in tropical and subtropical regions; 1 species recorded from South Africa, extending from the Transvaal and Natal to the Komgha district. (Type: *T. cannabina* Lour.)

NOTE.—It is doubtful whether the two South African plants *Trema guineensis* (Schum.) Ficalho and *Celtis kraussiana* Bernh. are generically distinct.—E. P. P.

1906

3. *CHAETACHME* Planch., Ann. Sc. Nat., ser. 3, vol. 10, p. 340 (1848)

(Chaetacme Planch., DC. Prodr., vol. 17, p. 209 (1873))

Flowers unisexual. *Perianth-segments* 5, deeply concave, with inflexed sides; in the male all equal; in the female flatish and one smaller than the others.

Stamens 5, included in the cavity of the perianth-segments. *Ovary* sessile; stigmas filiform, long and densely hairy-stigmatose. *Seed* without endosperm; cotyledons unequal, thick, with the larger enveloping the smaller.

Trees or shrubs, spiny, without stinging hairs; leaves alternate, stipulate; stipules connate and sheathing the bud, deciduous as the bud expands; male flowers in small axillary cymes or clusters; female flower solitary, axillary.

Species 4, found in Africa and Madagascar; 1 species in South Africa, extending from Natal to the Uitenhage district. (Type: *C. aristata* Planch.)

39. MORACEAE

Plants monoecious or dioecious. *Perianth* of 2—6 free segments or 2—6-lobed or -toothed or tubular or urceolate or absent. *Stamens* usually equal in number and opposite the perianth-segments, absent from the female flowers; filaments inflexed or straight in bud; anthers 2-theous, opening lengthwise. *Ovary* superior to inferior, usually 1-chambered, rudimentary or absent in the male flowers; ovule solitary, pendulous from the apex of the ovary-chamber, rarely basal and erect; stigmas 2, equal or unequal, subulate or filiform or style entire or bifid at the apex. *Fruit* either compound and globose or ellipsoid and formed from the enlarged fleshy perianth-segments and outer coat of the ovary or of achenes not or immersed in a flattened receptacle or enclosed in a globose or pear-shaped receptacle (fig). *Seed* with or without endosperm; embryo often curved.

Trees or shrubs, usually with milky juice; leaves alternate, rarely some opposite, simple, rarely digitately compound, stipulate; flowers in the indigenous South African species in dense globose heads or enclosed in the receptacle (fig).

Genera about 64; species about 1,000, widely distributed throughout the warmer regions.

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|--|-----------------------------|---|
| 1. Leaves digitately compound | 4. <i>Cannabis</i> Linn. | |
| Leaves simple | | 2 |
| 2. Flowers in dense globose heads ... | 1. <i>Cardiogyne</i> Bureau | |
| Flowers in a completely enclosed or open receptacle | | 3 |
| 3. Receptacle mostly fleshy, hollow, globose or obovoid, closed at the top except for a small ostiole (mouth), bracteate on the inside | 3. <i>Ficus</i> Lourn. | |
| Receptacle campanulate or obconic, wide open at the top; flowers exerted | 2. <i>Bosqueia</i> Thouars | |

1924 1. *CARDIOGYNE* Bureau in DC. Prodr., vol. 17, p. 232 (1873)

Plants dioecious. *Perianth-segments* 4, imbricate. *Stamens* 4, opposite the perianth-segments and longer than them, inflexed in bud, absent from the female flowers. *Ovary* sessile; style terminal, filiform. *Fruit* compound, pulpy, formed from the enlarged perianth-segments and bracts of the combined head of flowers, with the achenes embedded in the pulp. *Achenes* ellipsoid, notched at the apex. *Seed* with endosperm.

A climbing shrub or bush, sometimes growing into a tree; lateral branches forming large thorns; leaves simple, petioled, inconspicuously stipulate; flowers in dense globose heads, solitary or in pairs in the axils of the leaves; fruit globose, compound, pulpy.

Species 1, found in tropical Africa, Portuguese East Africa, and the Zoutpansberg district of the Transvaal. (Type: *C. africana* Bureau)

1960 **2. BOSQUIEA** Thouars ex Baill., *Adansonia*, vol. 3, p. 338, t. 10 (1862-63)

Plants monoecious. *Flowers* inserted in a campanulate or obconic androgynous receptacle. *Male flowers* covering the inner face of the receptacle. *Perianth* 0. *Stamens* intermixed with bracts; filaments slender; anthers erect, oblong or ellipsoid, obtuse or apiculate. *Female flower* solitary, sunk in the middle of the receptacle. *Perianth* 0. *Style* exerted, 2—3-lobed. *Ovule* pendulous from the apex of the ovary chamber. *Fruit* inferior; pericarp composed of the adnate persistent receptacle; pyrene rhomboid, 4-angled, beaked by the persistent style.

Trees; leaves alternate, shortly petioled, entire, coriaceous, penninerved; stipules intrapetiolar, caducous; receptacles solitary in the leaf-axils, subsessile or shortly pedunculate, with the margin shortly lobed.

Species 5, found in Madagascar, the Seychelles, and tropical Africa; 1 species recorded from South Africa.

1961 **3. FICUS** Linn., *Sp. Pl.*, ed. 1, p. 1059 (1753)

Plants monoecious or very rarely dioecious. *Male flowers*:—*Perianth* 2—6-lobed or -partite; lobes or segments imbricate, usually membranous and hyaline. *Stamens* 1—2, rarely 3—6. *Ovary* 0 or very rarely present and rudimentary. *Female flowers*:—*Perianth-segments* often fewer and narrower than in the male or rarely minute. *Ovary* mostly obliquely ellipsoid or ovoid; style almost invariably lateral; stigma usually oblong. *Achene* partially enclosed within the persistent perianth.

Trees or shrubs or rarely climbers, with milky juice; leaves alternate or very rarely opposite; stipules enveloping the terminal bud, caducous at the unfolding of the leaves or more rarely persistent; receptacles (fig) sessile or peduncled, mostly paired when axillary or sometimes solitary, when borne on the trunk or main branches remote from the leaves then in leafless panicles or more usually in fascicles; bracts at the ostiole (mouth) of the receptacle in several series, spreading horizontally across the mouth and then visible from outside or all descending abruptly into the interior of the receptacle and not visible from outside.

Species about 1,000, spread throughout the tropics and subtropics of both hemispheres, very numerous in tropical Africa; 24 species in South Africa, extending from the Transvaal, through Natal and the coastal belt to South West Africa. (Type: *F. carica* Linn.)

1973 **4. CANNABIS** Linn., *Sp. Pl.*, ed. 1, p. 1027 (1753)

Plants dioecious. *Male flowers*:—*Perianth* 5-parted; segments imbricate. *Stamens* 5; filaments very short, erect; anthers oblong. *Ovary* 0. *Female flowers*:—*Perianth* hyaline, embracing the ovary or 0. *Ovary* sessile; style central, divided into 2 filiform caducous lobes. *Fruit* a compressed crustaceous achene. *Seed* flattened; embryo curved; endosperm unilateral.

A tall erect annual herb; leaves alternate or the lower opposite; upper leaves 1—3-partite; lower leaves 5—11-partite; all serrated; stipules lateral; male flowers fascicled in short pendulous panicles; female flowers crowded under leafy convolute bracts.

Species 1, native of Asia; naturalized in South Africa. (Type: *C. sativa* L.)

NOTE.—J. Hutchinson, *Families of Flowering Plants (Dicotyledons)*, p. 231, places this genus into the family *Cannabinaceae*.—E. P. P.

40. URTICACEAE

Plants monoecious or dioecious. *Flowers* unisexual, rarely with occasional bisexual flowers. *Perianth* of 1—5 segments, sometimes absent in the female flowers. *Male flowers*:—*Stamens* as many as the perianth-segments and

opposite to them; filaments broadened at the base and inflexed in bud; anthers 2-thealous, opening by longitudinal slits. *Female flowers*:—*Perianth* as in the male, often enlarged in fruit, rarely 0. *Staminodes* scale-like, opposite the perianth-segments or absent. *Ovary* superior, 1-chambered, with one erect ovule; style simple or 0; stigma sometimes capitate and tuft-like or penicillate. *Fruit* a dry achene or fleshy drupe. *Seed* with a thin coat; endosperm usually present.

Herbs or shrubs, rarely trees, very rarely climbing, without milky juice, sometimes with stinging or sharply pointed hairs, often with masses of crystals (cystoliths) in the cells; leaves alternate or opposite, simple; stipules usually present; inflorescence various.

Genera about 42, with over 500 species, found in all warm and temperate countries.

- | | | | | | | | | | |
|---|---------------------------------|------------------------|-----|-----|-----|-----|-----|-----|----|
| 1. Leaves opposite | ... | ... | ... | ... | ... | ... | ... | ... | 2 |
| Leaves alternate | ... | ... | ... | ... | ... | ... | ... | ... | 4 |
| 2. Plants armed with stinging hairs | ... | 1. <i>Urtica</i> Linn. | | | | | | | |
| Plants without stinging hairs | ... | ... | ... | ... | ... | ... | ... | ... | 3 |
| 3. Flowers all free, none enclosed in an involucre; stamens 2—4 | | | | | | | | | |
| | 6. <i>Pilea</i> Lindl. | | | | | | | | |
| Several male and 1—3 female flowers enclosed in an involucre; stamen 1 | 9. <i>Droguetia</i> Gaudlich. | | | | | | | | |
| 4. Plants armed with stinging hairs | ... | ... | ... | ... | ... | ... | ... | ... | 5 |
| Plants without stinging hairs | ... | ... | ... | ... | ... | ... | ... | ... | 8 |
| 5. Perianth of female flowers of 2 very unequal lobes | | | | | | | | | |
| | 4. <i>Girardinia</i> Gaudlich. | | | | | | | | |
| Perianth of female flowers of 4—5-lobes | ... | ... | ... | ... | ... | ... | ... | ... | 6 |
| 6. Annual herbs | ... | ... | ... | ... | ... | ... | ... | ... | 7 |
| Trees or woody shrubs | ... | ... | ... | ... | ... | ... | ... | ... | 7 |
| 7. Stipules persistent | ... | ... | ... | ... | ... | ... | ... | ... | 9 |
| Stipules soon deciduous | ... | ... | ... | ... | ... | ... | ... | ... | 10 |
| 8. Flowers all free, none enclosed in an involucre | ... | ... | ... | ... | ... | ... | ... | ... | 9 |
| Several male and 1—3 female flowers enclosed in an involucre | ... | ... | ... | ... | ... | ... | ... | ... | 10 |
| 9. Perianth of female flowers flask-shaped, 2—4-toothed at the mouth; stamens 3—5 | ... | ... | ... | ... | ... | ... | ... | ... | 7 |
| | 7. <i>Pouzolzia</i> Gaudlich. | | | | | | | | |
| Perianth of female flowers investing or adnate to the ovary so that it appears absent; stamen 1 | ... | ... | ... | ... | ... | ... | ... | ... | 10 |
| | 10. <i>Australina</i> Gaudlich. | | | | | | | | |
| 10. Lobes of involucre much longer than the flowers | | | | | | | | | |
| | 8. <i>Forskohlea</i> Linn. | | | | | | | | |
| Lobes of involucre much shorter than the flowers | 9. <i>Droguetia</i> Gaudlich. | | | | | | | | |

1974

1. *URTICA* Linn., Sp. Pl., ed. 1, p. 983 (1753)

Plants monoecious or dioecious. *Male flowers*:—*Perianth* deeply 4-fid. *Stamens* 4. *Ovary* rudimentary, cup-shaped. *Female flowers*:—*Perianth* 4-partite. *Ovary* straight, ovoid; style usually absent, rarely short; stigma usually sessile, penicillate-capitate, deciduous or persistent. *Fruit* ovate or oblong in outline, compressed, included in the enlarged membranous rarely fleshy perianth.

Annual or perennial herbs, rarely woody at the base, sometimes with a creeping rootstock from which herbaceous stems are produced, armed with stinging hairs; leaves opposite, petioled, toothed or lobed, 5—7- (or rarely 3-) nerved; stipules free, very rarely connate; inflorescence an axillary spike or panicle bracteate at the base; flowers minute, often without bracts.

Species about 50, natives of temperate and subtemperate regions; 2 species found naturalized in South Africa and 2 species native; the native species found in Namaqualand and in the districts of Uitenhage, Bathurst, Queenstown, Graaff-Reinet, Beaufort West, and Molteno. (Type: *U. dioica* Linn.)

1978 2. URERA Gaudlich., in Freycinet, Bot. Voy., p. 496 (1826)

Plants dioecious, rarely monoecious. *Male flowers*:—*Perianth* 4—5-partite. *Stamens* 4—5. *Ovary* rudimentary, globose or almost cup-like. *Female flowers*:—*Perianth* of 4 lobes or segments. *Ovary* straight or oblique; stigma subsessile, penicillate-capitate or very rarely sublanceolate, persistent. *Fruit* straight or oblique, compressed or ventricose, long-stalked or included in the enlarged fleshy or succulent perianth. *Seed* with a thin coat; endosperm scanty or 0.

Shrubs or trees, rarely undershrubs, often with scattered stinging hairs; leaves alternate, entire, toothed or lobed, often palmately nerved; stipules free or rarely connate; flowers in laxly paniced clusters; panicles dichotomously cymose or irregularly racemose, axillary or solitary at the nodes, shortly or long peduncled; bracts small or 0.

Species about 38, natives of tropical Africa and America, with a few in Madagascar and the Pacific Islands; 2 species in South Africa, extending from the Transvaal and Natal to Pondoland; also recorded in the Queenstown district.

1979 3. OBETIA Gaudlich., Bot. Voy. Bonite, t. 82 (1844—52)

Plants dioecious. *Male flowers*:—*Perianth* of 5 concave lobes valvate in bud. *Stamens* 5. *Ovary* rudimentary. *Female flowers*:—*Perianth* of 4 segments, with the inner pair larger than the outer pair, increasing in fruit. *Ovary* ovoid; stigma shortly penicillate, on the upper oblique portion of the ovary. *Fruit* compressed, ovoid to orbicular in outline, partially enveloped in the thinly membranous persistent perianth.

Shrubs or small trees with stinging hairs on the younger parts; leaves alternate, petioled, simple, often palmately or pinnately lobed, cordate at the base; stipules lateral, foliaceous, persistent; inflorescence a much-branched panicle with cymose clusters.

Species 5, found in Africa and Madagascar; 1 species recorded from South West Africa. (Type: *G. ficifolia* Gaudlich.)

1982 4. FLEURYA Gaudlich., in Freycinet, Bot. Voy., p. 497 (1826)

Plants monoecious or dioecious. *Male flowers*:—*Perianth* 4—5-partite. *Stamens* 4—5. *Ovary* rudimentary, globose or subclavate. *Female flowers*:—*Perianth* of 4 segments, subequal or unequal, with the upper sometimes cucullate and the lower very small or absent. *Ovary* straight when young, soon afterwards oblique; stigma obliquely ovate or linear, at length inflexed and hooked, shortly papillose, sometimes with 2 minute lobes at the base. *Fruit* oblique, compressed, exserted from the slightly enlarged perianth. *Seed* with a membranous coat; endosperm scarcely any.

Annual herbs, sometimes with stinging hairs; leaves alternate, petioled, toothed, 3-nerved, with linear cystoliths; stipules obsolete, very rarely intrapetiolar, connate and 2-fid; flowers in axillary spikes or panicles.

Species about 13, natives of tropical regions; 3 species recorded from South Africa, extending from the northern Transvaal and Natal to the Uitenhage district.

1983 5. GIRARDINIA Gaudlich., in Freycinet, Bot. Voy., p. 498 (1826)

Plants monoecious or dioecious. *Male flowers*:—*Perianth* 4—5-partite; lobes ovate, concave, valvate in bud; bud depressed. *Stamens* 4—5. *Ovary* rudimentary. *Female flowers*:—*Perianth* consisting of a broad very concave posterior portion and a smaller hair-like anterior portion. *Ovary* straight; stigma subulate to filiform; ovule erect from the base. *Achene* much compressed, with the remains of the persistent perianth at the base.

Tall erect herbs, armed with strong stinging hairs; leaves alternate, petioled, roughly serrate or lobed; stipules connate; inflorescence axillary, generally solitary in the leaf-axils; male flowers crowded in clusters; female flowers densely crowded in unilateral cymes, copiously armed with stinging hairs.

Species 12, found in Africa, Madagascar, and Asia; 1 species recorded from the Barberton district, Transvaal. (Type: *G. palmata* Gaudlich.)

1984 6. PILEA Lindl., Coll. Bot., t. 4 (1821)

Plants monoecious or dioecious. *Male flowers*:—*Perianth* 2—4-partite; segments equal or unequal, with a gibbosity or obtuse subulate point on the back just below the apex on one or more of them. *Stamens* 2—4. *Ovary* rudimentary. *Female flowers*:—*Perianth* as in the male. *Stamens* rudimentary, scale-like. *Ovary* straight, compressed; stigma terminal, sessile, not oblique, formed of a dense tuft of short hairs. *Fruit* a compressed achene, scarcely or not at all oblique.

Annual or perennial herbs, often creeping, not armed with stinging hairs; leaves opposite, equal or unequal in each pair; stipules connate, entire; flowers in axillary sessile clusters or in peduncled heads, cymes, or panicles.

Species about 380, widely distributed throughout the warmer regions but absent from Australia; 1 species recorded from Houtbosch in the northern Transvaal. (Type: *P. muscosa* Lindl.=*P. microphylla* (L.) Liebm.)

1992 7. POUZOLZIA Gaudlich., in Freycinet, Bot. Voy., p. 503 (1826)

Plants monoecious, rarely dioecious. *Male flowers*:—*Perianth* 4—5-lobed or -partite, rarely 3-partite, concave or abruptly inflexed and dorsally transversely plicate. *Stamens* 4—5, rarely 3. *Ovary* rudimentary, clavate or oblong in outline. *Female flowers*:—*Perianth* tubular, often beaked, with the mouth contracted and 2—4-toothed. *Ovary* included; stigma filiform, villous on one side, soon deciduous. *Fruit* included in the enlarged withered or scarcely changed perianth; pericarp shining. *Seed* with a thin coat; endosperm scanty or 0.

Shrubs or undershrubs; leaves alternate or very rarely the lower all opposite, often entire, 3-nerved from the base (in 1 South African species white tomentose beneath); stipules free, often persistent; flowers more or less stalked, in sessile axillary clusters; bracts small.

Species about 64, natives of tropical regions; 2 species in South Africa extending from the Transvaal and Natal to the Transkei.

2012 8. FORSKOHLEA Linn., Mant., vol. 1, p. 72 (1767)

Plants monoecious. *Flowers* embedded in wool, with a more or less campanulate involucre. *Male flowers* stalked, many, forming an outer ring. *Perianth* club-shaped in bud, afterwards irregularly 3-lobed or 3-toothed; the middle lobe suberect or inflexed. *Stamen* 1. *Ovary* 0. *Female flowers* sessile, 1—5 in the centre of the male involucre. *Perianth* 0. *Ovary* straight; stigma filiform, papillose-hispid, long-persistent. *Fruit* ovate in outline, compressed, woolly, enclosed in the involucre. *Seed* with a thin coat; endosperm scanty or absent.

Herbs, sometimes woody at the base, often more or less hispid; leaves alternate, toothed, often whitish tomentose beneath, with the midrib branching into 3; stipules free; involucre generally several, sessile at the nodes, bearing long silky hairs on the outside; bracts generally 3—6, free or connate below.

Species 6, found in Africa, Arabia, and western India; 1 species in south-east Spain; 2 species occur in South Africa, found in South West Africa and the central districts, but also recorded from the Riversdale district. (Type: *F. tenacissima* Linn.)

2013 9. DROGUETIA Gaudich., in Freycinet, Bot. Voy., p. 505 (1826)

Plants monoecious, sometimes dioecious. *Androgynous involucre* few- to many-flowered, bowl-shaped, campanulate or ventricose, with toothed margins; female involucre 1- or 2-flowered, ventricose. *Male flowers* few to many, shortly stalked. *Perianth* tubular, club-shaped in bud, becoming 3-lobed above in flower. *Stamen* 1. *Ovary* 0. *Female flower* sessile, 1 or few in the centre of the involucre. *Perianth* 0. *Ovary* straight; stigma filiform, shortly papillose on one side, persistent during the ripening of the fruit. *Fruit* included in the involucre, woolly or smooth, ovate, compressed. *Seed* with a thin coat; endosperm present.

Herbaceous or somewhat shrubby perennials; leaves alternate or opposite, petioled, crenate-serrate, 3-nerved, with dot-like cystoliths; stipules lateral, free; involucre subsessile, shortly pubescent; the androgynous pairs in the leaf-axils; the female borne at the base of an undeveloped axillary shoot.

Species about 12, natives of Africa, Arabia, Madagascar, India, and Java; 5 species in South Africa, extending from Natal to the Malmesbury district; also recorded from South West Africa.

2014 10. AUSTRALINA Gaudich., in Freycinet, Bot. Voy., p. 505 (1826)

Plants monoecious. *Male flowers* few to many, sessile or subsessile. *Perianth* club-shaped in bud, after opening tubular below, with a broad outer acuminate lobe, or ultimately splitting almost to the base. *Stamen* 1. *Ovary* 0. *Female flowers* few, sessile. *Perianth* sac-like, enveloping the ovary, with a contracted minutely toothed mouth or 0. *Ovary* straight; stigma filiform or narrow-linear. *Fruit* included in the membranous or slightly fleshy perianth or naked. *Seed* with a thin coat; endosperm very scanty.

Diffuse annual or perennial herbs; leaves alternate or opposite, stalked, toothed; stipules lateral, free or sometimes joined below; flowers in axillary clusters; male flower-clusters sessile or stalked; female sessile.

Species about 10, natives of Africa, Australia, and New Zealand; 6 species in South Africa, extending from Namaqualand, through the coastal belt to Natal and the northern Transvaal; also recorded from the Somerset East district. (Type: *A. pusila* Gaudich.)

41. PROTEACEAE

Flowers bisexual or unisexual and these plants dioecious, rarely flowers unisexual with occasional bisexual flowers. *Perianth* of 4 segments, regular or more or less irregular, usually tubular in bud, variously split when open; segments valvate. *Stamens* 4, opposite the perianth-lobes and situated in spoon-like depressions of the lobes (at least in all the South African species); anthers free, 2-theous, opening lengthwise. *Ovary* superior, sessile or stalked, with or without hypogynous scales or an annular or cupular disc at the base, 1-chambered, sometimes oblique or excentric, with 1 or more pendulous

or laterally attached ovules; style simple; stigma various. *Fruit* a nut, drupe, follicle, or capsule. *Seeds* several or 2 or 1, often compressed and winged; endosperm 0.

Trees or shrubs, rarely perennial herbs; leaves spirally arranged, rarely verticillate or opposite, entire or variously and sometimes decompoundly divided; stipules 0; inflorescence in racemes, umbels, spikes, or in small or large, often involucre, heads.

Genera over 50, with nearly 1,000 species mostly massed in South Africa and Australia; a few species in tropical Africa, the Indo-Malayan region, the Pacific Islands, and South America.

- | | | |
|---|--------------------------------|----|
| 1. Leaves in whorls of 6 | 1. Brabejum Linn. | |
| Leaves alternate | | 2 |
| 2. Flowers unisexual | | 3 |
| Flowers bisexual | | 4 |
| 3. Male flowers in spike-like racemes; female flowers in heads surrounded by subulate bracts | 14. Aulax Berg. | |
| Male flowers in conical globular or cylindric heads; female flowers aggregated in cone-like heads ... | 13. Leucadendron R. Br. | |
| 4. Ovules 2 | 15. Hakea Schrad. | |
| Ovule solitary | | 5 |
| 5. Perianth separating into a lower segment and an upper portion consisting of the fused upper segment and the two lateral segments ... | | 6 |
| Perianth regular or slightly irregular; the 4 segments distinct ... | | 8 |
| 6. Inflorescence a spike or raceme ... | 10. Faurea Harv. | |
| Inflorescence a head | | 7 |
| 7. The upper and lateral perianth-segments fused all the way up, so that 3 stamens are situated in a single spoon-like depression and cohere laterally; segments toothed or awned; leaves never toothed | 11. Protea Linn. | |
| The upper and lateral perianth-segments fused but the 3 limbs free and each with a single stamen; leaves often toothed at the apex | 12. Leucospermum R. Br. | |
| 8. Involucral-bracts large, red; the outermost shaggy; heads terminal, many-flowers | 6. Orothamnus Pappe | |
| Involucral-bracts usually small, if large then whitish and glabrous ... | | 9 |
| 9. Heads 3—12-flowered, massed in the axils of the upper leaves and partly hidden by them | 5. Mimetes Salisb. | |
| Heads few- or many-flowered, solitary, axillary or terminal or arranged in spikes, racemes, panicles, or corymbs | | 10 |
| 10. Involucre cup-like, more or less bilabiate; the bracts never imbricate ... | | 11 |
| Involucral-bracts imbricate, when only 4 then the lateral outside ... | | 12 |
| 11. Perianth slightly irregular; the upper lobe being larger and more densely villous or bearded than the others; ovary somewhat oblique; stigma obliquely discoid | 8. Spatalla Salisb. | |
| Perianth regular; ovary not oblique; stigma obliquely capitate | 9. Spatalopsis Phill. | |
| 12. Heads always 4-flowered, arranged in cylindric rarely subglobose spikes; involucral-bracts 4, with the 2 lateral ones outside the other 2 | 3. Paranomus Kn. | |

- Heads few- (2—7) or many-flowered, either solitary or arranged in short dense spikes or racemes or in a panicle or corymb ... 13
13. Heads solitary, sessile or peduncled, axillary or terminal ... 14
 Heads in terminal corymbs or panicles or in short dense globose spikes or racemes ... 15
14. Leaves entire, flat, rarely ericoid or minutely toothed at the apex
 7. *Diastella* Kn.
 Leaves much dissected into cylindric segments, rarely entire
 4. *Serruria* Salisb.
15. Heads in short dense globose spikes or racemes
 2. *Sorocephalus* R. Br.
 Heads in terminal corymbs or panicles
 4. *Serruria* Salisb.

2024 1. BRABEJUM Linn., Sp. Pl., ed. 1, p. 121 (1753)

Flowers regular, bisexual, with occasional unisexual flowers. *Perianth* cylindric in bud, with a globose limb; segments 4, separating to the base on flowering; stamens slightly shorter than the perianth-segments; filaments linear, from the base of the perianth-segments; connective of anthers produced into a small apical gland. *Hypogynous disc* annular. *Ovary* sessile, long-hairy; style terete, clavate above. *Ovules* 2, pendulous. *Fruit* a drupe, densely velvety; exocarp corky; endocarp woody. *Seed* solitary; embryo with hard thick equal cotyledons.

A small tree or shrub; leaves in whorls of 6, shortly petioled, undivided, serrate, coriaceous; flowers pedicelled, 2-nate in the axils of early deciduous bracts, arranged in dense spike-like axillary racemes.

Endemic; species 1, extending from the Cape Peninsula to the Riversdale district. (Type: *B. stellatifolium* Linn.)

2028 2. SOROCEPHALUS R. Br., Trans. Linn. Soc., vol. 10. p. 139 (1810)

Flowers bisexual, regular. *Perianth* cylindric and straight in bud with an ellipsoid or ovoid limb, 4-partite to near the base; claws straight or spirally twisted in the open flower, hairy; limb usually villous, rarely pubescent or glabrous. *Connective* of anther slightly produced at the apex. *Hypogynous* scales 4, free, linear. *Ovary* sessile or shortly stipitate, hairy; style slender; stigma terminal, conical, ellipsoid or subglobose, obtuse. *Ovule* 1, laterally attached. *Fruit* usually a glabrescent shining ellipsoid or cylindric sessile or shortly stipitate nut, with a more or less hardened pericarp.

Small erect shrubs; leaves numerous, usually erect, terete or subterete, rarely quite flat, acutely or obtusely mucronate, smooth or slightly scabrous, glabrous or thinly pilose; flower-heads 2—6-flowered, arranged in dense short spikes or racemes, each head subtended by a more or less membranous glabrous or hairy bract; floral bracts free from one another.

Endemic; species 13, extending from the Tulbagh to the Swellendam district. (Type: *S. imbricatus* (Thunb.) R. Br.)

2029 3. PARANOMUS Salisb., Parad. Londin., sub. t. 66 (1807)
 (*Nivenia* R. Br.)

Flowers bisexual, regular. *Perianth* cylindric in bud, with an ellipsoid limb, 4-partite to near the base; tube short, usually glabrous, rarely villous. *Anthers* sessile or subsessile, with the connective usually very slightly produced at the apex. *Hypogynous* scales linear or subulate. *Ovary* sessile,

pubescent, surrounded by a basal ring of hairs; style usually glabrous, sometimes partly hairy; stigma narrowly clavate or subellipsoid, rarely broadly ovoid and capitate; ovule 1, laterally inserted. *Fruit* a smooth ivory-white shining nut, with a basal ring of hairs, often beaked and tipped by the persistent portion of the style.

Small erect shrubs; leaves usually crowded, dimorphic with the lower variously pinnately divided and the upper broadly spatulate or flabellate and tapered to a petiolar basal portion or leaves all alike and much dissected with linear obtuse segments and more or less fan-like in outline, glabrous or silky-tomentose; flowers in partial 4-flowered heads, the latter arranged in terminal usually solitary sessile or pedunculate cylindric or rarely subglobose spikes; partial heads each subtended by a solitary coriaceous entire bract; floral bracts 4.

Endemic; species 14, extending from the Clanwilliam to the Uitenhage district.

2030 4. SERRURIA Salisb., Parad. Londin., sub. t. 67 (1807)

Flowers bisexual, regular. *Perianth-segments* free or slightly connate at the base, usually villous or hirsute, rarely glabrous. *Anthers* oblong, sessile, shorter than the limb, with the connective rarely slightly produced. *Hypogynous* scales present or absent. *Ovary* sessile or very rarely stipitate, villous or pubescent; style glabrous or rarely pubescent in the lower part; stigma subclavate or cylindric; ovule 1, laterally attached. *Nut* ovoid or subglobose, sometimes beaked by the persistent style-base.

Leafy shrubs; branches erect or prostrate; leaves usually crowded, often much dissected into cylindric acute segments, rarely entire; flower-heads in terminal corymbs or panicles; heads often with a small involucre of barren bracts; floral bracts mostly villous, usually shorter than the flowers; receptacle conical or subglobose, mostly hairy.

Species about 50, confined to the south-western districts of the Cape Province.

2031 5. MIMETES Salisb., Parad. Londin., sub. t. 67 (1807)

Flowers bisexual, regular. *Perianth-tube* very short or wanting; segments filiform or linear-filiform, often villous; limb usually villous, rarely glabrescent. *Stamens* often fused with the perianth; connective produced into an acute or rounded apical appendage. *Hypogynous* scales usually filiform or linear, rarely ovate-lanceolate. *Ovary* sessile, pubescent; style mostly glabrous; stigma terete or linear, rarely subquadrangular, sometimes swollen at the apex, more or less kneed or sinuate at the junction with the style; ovule 1. *Fruit* ovoid, glabrescent, with a slightly hardened pericarp.

Erect or subdecumbent undershrubs; stems tomentose or villous; leaves mostly oblong-elliptic or ovate, with a callous and entire or 3-dentate at the apex, mostly densely adpressed silky-tomentose or villous; flower-heads sessile, solitary in the upper leaf-axils, 3—12-flowered; involucre-bracts usually shorter than the flowers, membranous or coriaceous, often villous or tomentose, frequently coloured; receptacle densely setose.

Species about 16, confined to the south-western districts of the Cape Province.

2031a 6. OROTHAMNUS Pappé, ex Hook. Bot Mag., t. 4357 (1848)

Flowers bisexual, regular. *Perianth-tube* short, pubescent; segments linear. *Filaments* fused with the perianth-segments; anthers linear, with the connective produced into a distinct apical gland. *Hypogynous* scales 4, free, linear. *Ovary* sessile, with a solitary ovule; style glabrous; stigma linear, grooved, obtuse.

An erect shrub; branches long pilose; leaves ciliate; flower-heads sessile, crowded at the extremities of the branches, many-flowered; involucre-bracts large, coloured; the outermost densely shaggy.

Endemic; species 1 found on the Hottentot Hollands Mountains in the Cape Province. (Type: *O. zeyheri* Pappe)

2031b **7. DIASTELLA** Salisb. in Kn. Prot., p. 61 (1809)

Flowers bisexual, regular. *Perianth* cylindric in bud with an ellipsoid limb; segments free or slightly connate at the base, villous; limb villous or rarely glabrous. *Anthers* oblong, sessile, shorter than the limb, with the connective produced into a small apical appendage. *Hypogynous scales* absent. *Ovary* sessile, pubescent; style subpersistent, glabrous or pilose in the lower part; stigma cylindric, gradually tapering into the style; ovule 1, pendulous. *Fruit* a yellowish-white ellipsoid beaked nut with a thin reticulated pericarp. *Seed* with a membranous hyaline testa; cotyledons large, flat, broad, thin.

Erect or prostrate undershrubs; branches pilose or villous; leaves crowded or more often lax, elliptic, spathulate or suborbicular, rarely ericoid, entire or sometimes minutely toothed at the apex, usually hairy; flowers in terminal solitary sessile subglobose or obconic bracteate heads; involucre-bracts never or only slightly exceeding the flowers, ciliate, mostly coloured; floral bracts linear or filiform, densely villous; receptacle flat or slightly concave, long-setose with fine rust-coloured hairs.

Endemic; species 5, extending from the Tulbagh to the Caledon district.

2032 **8. SPATALLA** Salisb., Parad. Londin., sub. t. 67 (1807)

Flowers bisexual, slightly irregular. *Perianth* cylindric in bud with an ellipsoid recurved limb, 4-partite to below the middle, rarely only to the middle, always with a distinct tube; the posticous segment larger and thicker than the 3 anticus segments; all segments more or less equally hairy. *Anthers* broadly ovoid or rounded, sessile or subsessile, with the connective always slightly produced into a small globular point. *Hypogynous scales* 4, free, usually linear or subulate. *Ovary* sessile or very shortly stipitate, hairy; style subpersistent, glabrous; stigma very small, situated in the middle of a flat or concave oblique usually obovate disc; ovule 1, laterally attached. *Fruit* a pubescent brown shortly stipitate ovoid or ellipsoid nut.

Usually small erect or spreading shrubs; leaves often crowded and numerous, ericoid or acicular, entire, often mucronate, straight or falcate, incurved or at length recurved, pilose when young, at length becoming glabrous or almost so; flowers in 1-flowered or few-flowered (3—4) involucre which are arranged in terminal sessile or pedunculate spikes or racemes; involucre calyoid, when 1-flowered then bilabiate, with the posticous lip entire and the anticus lip bifid or bilobed or trifid or tripartite to near the base.

Endemic; species 21, extending from the Clanwilliam to the George district.

2032a **9. SPATALLOPSIS** Phill., Kew Bull., p. 286 (1910)

Flowers bisexual, regular. *Perianth* straight and cylindric in bud, with an ellipsoid limb, 4-partite to below the middle; tube glabrous or almost so; limb villous. *Anthers* ellipsoid, sessile, with the connective slightly produced into a small globular point. *Hypogynous scales* 4, free, linear. *Ovary* sessile or subsessile, hairy; style subpersistent, glabrous; stigma conical or subclavate, terminal; ovules 1, laterally attached. *Fruit* as in *Spatalla*.

Habit of *Spatalla*; flowers in 3—4-flowered involucre which are arranged in terminal spikes or racemes; involucre calyoid, small, more or less regularly 4-partite to near the base; bract subtending the secondary peduncles or the involucre solitary, linear to ovate.

Endemic; species 5, extending from the Clanwilliam to the Caledon district.

2034 **10. FAUREA** Harv. in Hook. Lond. Journ. Bot., vol. 6, p. 373, t. 15 (1847)

Flowers bisexual, irregular. *Perianth* tubular in bud, with an obovoid to clavate limb; the anticus segment separating from the other 3 segments which remain permanently united into a flattened spreading or recurved sheath bearing the more or less separating or cohering spoon-shaped limbs. *Filaments* very short; anthers with the connective usually produced into a small apical gland. *Hypogynous scales* free, lanceolate, subulate or trian-gular, persistent on the disc-shaped torus. *Ovary* covered with long hairs; style more or less curved, long persistent, glabrous; stigma terete or quad-rangular; ovule 1, lateral. *Fruit* a nut, long villous.

Trees or shrubs; leaves alternate, petioled, entire, coriaceous, more or less glabrous; flowers in terminal solitary spikes or racemes, each flower subtended by a small bract; perianth at length deciduous.

Species about 18, mostly African; 5 species found in South Africa extending from the Transvaal and Natal to the Knysna district; 1 species recorded from Madagascar. (Type: *F. saligna* Harv.)

2035 **11. PROTEA** Linn., emend R. Br., Trans. Linn. Soc., vol. 10, p. 74 (1810)

Flowers bisexual, zygomorphic. *Perianth* tubular in bud, more or less widened towards the base, divided when flower opens into an anticus part consisting of 1 segment and a posticus part consisting of 3 segments fused together; the 3 fused lobes of posticus part 3-toothed or 3-awned; whole perianth glabrous or variously hairy. *Anthers* sessile or subsessile, linear, rarely oblong, with the connective produced into a small fleshy gland. *Hypogynous scales* 4, free, rarely absent. *Ovary* covered with long hairs; style rigid, straight or curved, glabrous or hairy; stigma slender, passing gradually into the style or suddenly bent or kneed at the junction with the style; ovule 1. *Fruit* a densely bearded nut, crowned by the per-sistent style.

Small trees or shrubs, sometimes creeping, sometimes acaulescent, with glabrous or hairy stems; leaves alternate, coriaceous, entire, hairy or glabrous; flowers in many-flowered sessile or subsessile terminal or lateral usually solitary heads, enclosed in an involucre of numerous imbricate coriaceous to scarios glabrous or hairy, sometimes bearded, variously coloured bracts; receptacle flat, convex or conical, bearing numerous short persistent free or coalescent paleae.

An African genus of about 130 species; about 100 species found in South Africa mostly in the south-western districts of the Cape Province; also found in Natal, Basutoland, Swaziland, and the Transvaal. (Type: *P. cynaroides* (L.) Linn.)

2036 **12. LEUCOSPERMUM** R. Br., Trans. Linn. Soc., vol. 10, p. 95 (1810)

Flowers bisexual, rarely quite regular. *Perianth* cylindric in bud, with an ovoid or ellipsoid limb, 2- or 4-partite to or beyond the middle, always with a distinct tube, often with anticus part consisting of 1 segment and a posticus part consisting of 3 segments fused together but with the limbs free. *Anthers* sessile or subsessile, oblong to ovate, with the connective sometimes produced into a small point. *Hypogynous scales* linear or subu-late. *Ovary* sessile, pubescent, surrounded by a basal ring of hairs; style filiform or subulate, straight or nearly so, subpersistent; stigma conical, ovoid, obliquely turbinate or cylindric; ovule 1, laterally attached. *Fruit* a whitish smooth often shining nut, with a crustaceous pericarp.

Erect shrubs sometimes trailing; leaves entire or toothed at the apex, usually hairy, sometimes becoming glabrous; flowers in terminal heads or, by overtopping,

pseudolateral heads; heads solitary or in clusters of 2—3, rarely more, shortly peduncled or sessile, bracteate; receptacle cylindric, conical, or flat.

Species about 40, all with the exception of 2 species found in Rhodesia and tropical Africa, mostly found in the south-western districts of the Cape Province; 1 species found in Natal and the Transvaal and 1 species found in Namaqualand. (Type: *L. hypophyllum* R. Br.)

2037

13. LEUCADENDRON Berg. emend R. Br., Trans. Linn. Soc., vol. 10, p. 50 (1810)

Plants dioecious. *Flowers* regular. *Male flowers*:—*Perianth* linear, with a somewhat thickened limb; segments at length separated to the middle or nearly to the base. *Anthers* sessile, oblong or linear, with the connective sometimes produced. *Hypogynous scales* free, linear or filiform, or absent. *Pistil* rudimentary, consisting of a short slender style and a clavate entire or slightly bifid stigma. *Female flowers*:—*Perianth* more or less as in the male, but usually more deeply divided. *Staminodes* usually linear. *Ovary* ovoid, trigonous or compressed; style usually slender and gradually widened towards the apex, usually persistent; stigma oblique or lateral, entire or bifid, rarely 2-lobed; ovule solitary. *Fruit* a nut; ovoid, transversely ellipsoid, trigonous or flattened and winged, emarginate.

Trees or shrubs or decumbent undershrubs; leaves acicular, linear, lanceolate to obovate, hardened at the apex into a blunt (rarely acute) callus, coriaceous, glabrous, pilose or silvery; male flowers usually numerous, arranged in conical or globular or cylindric heads; each flower subtended by a bract; heads terminal, sessile or rarely pedunculate, sometimes surrounded by an involucre of imbricate bracts within the upper leaves; female flowers solitary, subtended by woody bracts, aggregated in cone-like heads; bracts erect or spreading, free or partially united, usually truncate, rounded or retuse at the apex, rarely subacute.

Endemic; species about 73, many very imperfectly known and described from specimens represent only one sex only; the majority of the species massed in the south-western districts of the Cape Province. (Type: *L. argenteum* (L.) R. Br.)

2038

14. AULAX Berg. Descr. Pl. Cap., p. 33 (1767)

Plants dioecious. *Flowers* regular. *Male flowers*:—*Perianth* tubular, straight in bud, on opening separating into linear segments. *Anthers* linear, subsessile, with the connective not produced. *Hypogynous scales* 0. *Ovary* rudimentary, small; style subulate, thickened upwards. *Female flowers*:—*Perianth* tubular in bud, widened towards the base, cylindric above; tube subangular, as long as or longer than the lobes. *Staminodes* very short, filiform. *Hypogynous scales* 0. *Ovary* densely covered with long hairs, style filiform, subclavate upwards; stigma lateral at the end of the style, deeply and longitudinally grooved; ovule 1, ascending from near the base; *Nut* somewhat compressed, angular, hairy.

Glabrous densely foliate shrubs; leaves scattered, undivided, entire, narrow, coriaceous; male flowers in spike-like bracteate racemes which are terminal on short leafy branchlets; branchlets usually gathered into fascicles or pseudo-whorls at the end of longer shoots; female flowers in involucre heads which are arranged more or less like the male racemes but usually fewer and surrounded by the crowded uppermost leaves.

Endemic; species 3 found in the south-western districts of the Cape Province and extend to the Riversdale district. (Type: *A. pinifolia* (L.) Berg.)

2047

15. HAKEA Schrad., Sert. Hannov., vol. 3, p. 27, t. 17 (1797)

Flowers bisexual, irregular, rarely regular. *Perianth-tube* twisted or recurved, rarely straight; segments free to the base; lobes cohering for some time.

Anthers sessile, ovate or oblong; the connective not produced. *Hypogynous disc* fleshy, unilateral, semi-annular, sometimes small. *Ovary* subsessile; style sometimes elongated and projecting from the fissures of the perianth-tube and adhering to the perianth-lobes above or sometimes straight and shorter than the perianth; stigma thickened, sometimes dilated into an oblique lateral disc, with the stigmatic surface small in the centre of the disc, sometimes straight and conical, with the stigmatic surface terminal; ovules 2, laterally attached. *Fruit* a capsule, hard, often woody, sometimes warted, opening at the apex by 2 valves. *Seeds* 2 (or solitary by abortion), winged.

Shrubs, rarely trees; leaves alternate, heteromorphous, leathery, rigid, terete or flat, entire, toothed or variously dissected; inflorescence a short or long sessile raceme, axillary, rarely terminal or the flowers in axillary rarely terminal fascicles.

An Australian genus of about 100 species, about 5 species naturalized in South Africa.

42. LORANTHACEAE

Flowers regular or irregular, bisexual or unisexual. *Calyx* adnate to the ovary, gamosepalous, lobed or truncate, sometimes obsolete. *Corolla* polypetalous or gamopetalous, petaloid or sepeloid, valvate in bud; tube often split down one side. *Stamens* as many as and opposite the petals or corolla-lobes, inserted on the petals or at their base; anthers usually 2-theous, sometimes divided into numerous small thecae, opening lengthwise or by terminal pores or transverse slits. *Disc* superior, annular or 0. *Ovary* inferior, usually without a distinct placenta and ovules; style simple or 0; stigma not or hardly lobed. *Fruit* a berry (in all the South African species) or drupe, crowned by the persistent calyx when the latter is present; pericarp sticky. *Seed* solitary, without a testa; endosperm present or 0; cotyledons sometimes up to 3 in 1 seed.

Green shrubs or more rarely herbs, very rarely trees, often parasitic; leaves opposite, whorled, or alternate, simple, entire, sometimes reduced to mere scales or teeth; stipules 0; inflorescence a raceme, cyme, spike, umbel or head, sometimes flowers solitary or fascicled; flowers often large and brightly coloured or small, greenish, and inconspicuous.

Genera about 27, with about 1,000 species found chiefly in tropical and subtropical regions.

2074

1. LORANTHUS Linn. Sp. Pl., ed. 1, p. 331 (1753)

Flowers bisexual. *Calyx* more or less lobed or truncate, sometimes very short, occasionally provided inside at the base with a fleshy annular thickening. *Corolla* polypetalous or more frequently gamopetalous, regular or irregular; tube often split unilaterally for some distance downwards when the flower opens. *Filaments* united in their lower part with the petals. *Style* filiform or sometimes skittle-shaped above; stigma truncate or more or less capitate. *Fruit* baccate, usually globose, ovoid or ellipsoid, crowned by the persistent calyx. *Seed* with endosperm; embryo straight, terete.

Parasites; leaves green, opposite, ternate or alternate; inflorescence (in the African species) a raceme, spike, umbel, or head; subtending bract of each flower situated at the apex of the pedicel when the latter is present; flowers often large and brightly coloured.

Species about 600, mostly found in tropical and subtropical regions, a few species recorded from south Europe, temperate Asia, Australia and New Zealand, the Pacific Islands, and South America; 25 species in South Africa, widely distributed over the Union. (Type: *L. americanus* Linn.)

2093

2. VISCUM Linn., Sp. Pl., ed. 1, p. 1023 (1753)

Plants monoecious or dioecious. *Calyx* absent or represented by a mere rim. *Male flowers* in parts of 3 or 4. *Receptacle* more or less hollow. *Corolla* polypetalous, but usually appearing gamopetalous; petals 3 or 4, more or less triangular. *Anthers* sessile, adhering by their dorsal surface to the lower part of the petals and the upper part of the receptacular tube. *Female flowers*:—*Corolla* superior, polypetalous; petals 3—4, deciduous or persistent. *Ovary* inferior; style short or 0; stigma thick, cushion-shaped. *Berry* sometimes crowned with the persistent petals. *Seed* with endosperm; embryos 1—3, terete.

Green, leafy or, at first sight, leafless shrubs, parasitic on other plants; branches usually much forked, jointed immediately above the nodes; internodes often compressed, angled or not; leaves opposite, well developed or represented by small scales; inflorescence axillary or axillary and terminal, consisting of solitary or fasciated flowers or cymes; cymes peduncled or sessile, 3—9-flowered; flowers small, green, yellow, or white; berries red, orange, yellow, or white.

Species about 100 all found in the Old World and mostly natives of the warm regions; 23 species recorded from South Africa, fairly widely distributed over the Union. (Type: *V. album* Linn.)

43. SANTALACEAE

Flowers bisexual, more rarely unisexual, regular. *Perianth* simple, green or petaloid, often fleshy, adnate to the ovary; lobes 4—5, more rarely 3 or 6, with (in most of the South African genera) a tuft of hairs inside at the back of the anthers, usually valvate in bud. *Stamens* the same number as the perianth-lobes and opposite to them; anthers 2-theous, opening lengthwise. *Disc* epigynous or perigynous, prominent or obscure. *Ovary* inferior or half inferior, 1-chambered, with 1—4, rarely 5, pendulous ovules from a free-central placenta; style usually simple; stigma terminal, capitate or 2—5-lobed. *Fruit* indehiscent, dry or fleshy. *Seed* globose or ovoid, without a testa; endosperm copious; cotyledons mostly terete.

Trees, shrubs or herbs, sometimes parasitic; leaves usually alternate, more rarely opposite, entire, sometimes reduced to scales; stipules absent; inflorescence axillary or terminal; flowers usually small.

Genera about 27; species about 400, spread throughout tropical and temperate regions.

- | | | |
|---|-------------------------------|---|
| 1. Leaves opposite | 1. <i>Rhoicarpus</i> A.DC. | 2 |
| Leaves alternate, very rarely opposite | | |
| 2. Fruit succulent | | 3 |
| Fruit dry and ribbed | | 4 |
| 3. Perianth 3—4-lobed; stamens 3—4 ... | 2. <i>Osyris</i> Linn. | |
| Perianth 5-lobed; stamens 5 | 3. <i>Osyridicarpus</i> A.DC. | |
| 4. Flowers unisexual; perianth-segments and stamens 4 | 4. <i>Thesidium</i> Sond. | |
| Flowers bisexual; perianth-segments and stamens 5 | 5. <i>Thesium</i> Linn. | |

2104 1. RHOIACARPOS A.DC. in DC. Prodr., vol. 14, p. 634 (1857)

Flowers bisexual. *Perianth* 5-lobed; tube slender, obconic; lobes ovate, acute, persistent, with a tuft of hairs attached to the anthers. *Stamens* 5,

with slender filaments; anthers 2-theous. *Disc* subconcave, with short prominent obtuse lobes. *Ovary* fleshy, with 5 ovules hanging from the apex of the straight cylindric placenta; style cylindric-conical; stigmas 5, minute. *Fruit* a red drupe, crowned with the persistent perianth-lobes. *Seed* solitary, bony.

A shrub; branches stiff, 4-angled, sometimes subscandent; younger branches almost winged; leaves opposite, sessile, somewhat rounded or subcordate at the base, with a prominent midrib; inflorescence a short axillary or terminal raceme or panicle composed of usually 3-flowered axillary cymes; bracts persistent, small, leaf-like, partly adnate to the peduncles.

Endemic; species 1, extending from the Mossel Bay district to British Kaffraria. (Type: *R. capensis* A.DC.)

NOTE.—In specimens I examined 5 ovules were not observed.—E. P. P.

2108 2. OSYRIS Linn., Sp. Pl., ed. 1, p. 1022 (1753)

Flowers bisexual or unisexual by abortion. *Male flowers* with a short and solid perianth-tube. *Stamens* 3—4, inserted at the base of the perianth-lobes. *Female flowers* with a 3—4-lobed perianth; tube adnate to the ovary; lobes deltoid, with a tuft of hairs on the face attached to the back of the anthers, valvate in bud. *Disc* flat, angled between the stamens. *Ovary* with 2—4 ovules pendulous from a short central placenta; style short or long; stigma 3—4-fid. *Fruit* a globose drupe, crowned with the persistent perianth-lobes. *Seed* solitary; endosperm fleshy.

Glabrous shrubs; leaves alternate, rarely subopposite or opposite; inflorescence a short axillary panicle; bracts solitary, minute.

Species 12, spread through southern Europe, India, and Africa; 1 species in South Africa, extending from the Transvaal and Natal to the Cape; also recorded from several of the central districts of the Cape Province. The one South African species is very variable. (Type: *O. alba* Linn.)

NOTE.—In one specimen examined there was no sign of hairs on the anthers.—E. P. P.

2116 3. OSYRIDICARPOS A. DC. in DC. Prodr., vol. 14, p. 635 (1857)

Flowers bisexual. *Perianth* 5-lobed, adnate to the ovary below; tube cylindric; lobes with a tuft of hairs on the face attached to the back of the anther, valvate in bud. *Stamens* 5, inserted below the perianth-lobes. *Disc* indistinct. *Ovary* with 2—3 pendulous ovules from the apex of a flexuous filiform central placenta; stigma obscurely lobed. *Fruit* a drupe, globose, crowned with the persistent perianth-lobes.

Undershrubs with long slender branchlets; leaves alternate, shortly petioled, oblong or lanceolate, 3-nerved; inflorescence a terminal raceme, produced down into the axils of the leaves; bracteoles minute.

An African genus of 5 species; 1 species in South Africa, extending from the Transvaal and Natal to the Albany district. (Type: *O. schimperianus* A. DC.)

2117 4. THESIDIUM Sond., in Flora, vol. 40, p. 364 (1857)

Plants dioecious. *Male flowers* with a salver-shaped perianth. *Perianth-tube* slender, continuous with the solid receptacle; lobes spreading, with a bundle of hairs arising from their base and attached to the back of the anthers. *Stamens* 4, inserted at the base of the perianth-lobes. *Style* rudimentary or more often absent. *Female flowers* with an ovoid receptacle adnate to the ovary. *Perianth-tube* very shortly campanulate or scarcely evident; lobes 4, rarely 5. *Disc* usually obscure. *Staminodes* rarely present. *Ovary* with 2—3 pendulous ovules from the apex of a central straight or folded filiform placenta; style short; stigma obscurely 2—3-lobed. *Fruit*

a nut, with a fleshy basal ring, small, globose or ovoid, crowned with the persistent perianth, 5-ribbed and conspicuously reticulated, sometimes pitted.

Low, much-branched, semi-parasitic shrubs or herbs; leaves alternate, often very small or squamiform, rigid; flowers very small, subsessile, solitary or in 2—3-flowered cymes in the axils of bracts, arranged in slender terminal spikes; bracts and bracteoles in the male plant usually small; in the female often conspicuous, frequently hispid or scabridulous.

Endemic; species 7 or 8, confined to the coastal belt from the Malmesbury to the Port Elizabeth district. (Type: *T. exocarpaceoides* Sond.)

2118

5. THESIUM Linn., Sp. Pl., ed. 1, p. 207 (1753)

Flowers bisexual. *Perianth* 5-lobed, cup-shaped or on a tubular or turbinate receptacle enclosing the ovary; lobes more or less hooded, with or without an apical beard of hairs, usually with a tuft of hairs on their face behind the anthers and adhering to the apex of the anther, when hairs absent then a ring of hairs occurs at the throat of the perianth-tube at the level of the insertion of the filaments, with the margins of the lobes hairy, papillose, fringed or glabrous. *Stamens* 5, inserted at the base of the perianth-lobes or in the perianth-tube. *Disc* often conspicuous. *Ovary* with 2—4 ovules pendulous from the apex of a slender flexuous placenta; style cylindrical or almost absent; stigma capitate or obscurely 3-lobed. *Fruit* dry, ellipsoid, globose or obovoid, usually 10-ribbed, with more or less conspicuous reticulations between the ribs, crowned with the persistent perianth. *Seed* similar in shape to the fruit; endosperm fleshy.

Herbs or undershrubs, usually (if not always) semi-parasitic; leaves alternate (in the South African species), linear, linear-lanceolate, subulate or reduced to scales or spines, rarely suborbicular; inflorescence a loose or compact terminal or axillary raceme, spike or panicle, frequently cymose, sometimes a small or fairly large dense head.

Species about 282, inhabiting the temperate regions or the mountains of the tropical zone of the Old World; 2 species recorded from South America; 151 species found in the Union, widely distributed. (Type: *T. alpinum* Linn.)

44. GRUBBIACEAE

Flowers bisexual, regular. *Perianth* adnate to the ovary, normally 4-lobed, with the lobes sometimes densely bearded on the back. *Stamens* 8, in 2 whorls of 4 each; filaments incurved; anthers 2-theous. *Disc* very slightly prominent, hairy. *Ovary* inferior, 1-chambered or at first incompletely 2-chambered, with 2 pendulous ovules from a placenta which may be free or more or less adnate to the ovary wall; style short and filiform or conical. *Fruits* connate, crowned with the disc and sometimes the style; endocarp often bony. *Seed* ovoid; endosperm fleshy; radicle much longer than the cotyledons.

Shrubs 1—9 ft. high; leaves opposite, heath-like, linear or lanceolate, entire, with revolute margins, stipules absent; flowers small, in the axils of the leaves, usually 3 surrounded by an involucre or arranged in small strobili.

2121

GRUBBIA Berg., Vet. Akad. Handl. Stockholm, p. 34 (1767)

The only genus. Characters of the family.

Endemic; 4 species have been described extending from the Cape to the Uitenhage district. (Type: *G. rosmarinifolia* Berg.)

NOTE.—*G. pinifolia* Sond. and *G. hirsuta* E. Mey., I consider to be the same species as *G. rosmarinifolia* Berg. *G. stricta* A. DC. is quite distinct from the above. The number of species is, therefore, only 2.—E. P. F.

45. OLACACEAE

Flowers bisexual, regular. *Calyx* truncate, 4—6-toothed or -lobed, sometimes absent. *Petals* 3—6, free or variously connate, valvate in bud. *Stamens* free or rarely united into a column, the same number as and opposite the petals or fewer or more numerous than the petals, some often without anthers; anthers 2-theous, opening by 2 longitudinal slits or by pore-like slits. *Staminodes* sometimes present. *Disc* various, often annular. *Ovary* superior or nearly so, rarely half-inferior, at the base or almost to the apex 3—5-chambered, sometimes the septa absent and then the ovary 1-chambered; ovules 1—5 from the apex of the central placenta of the 1-chambered ovary or pendulous from the inner angle of the 2- or more-chambered ovaries; style simple. *Fruit* often drupaceous, sometimes enclosed by the enlarged calyx. *Seeds* with a small embryo and abundant endosperm.

Trees, shrubs, or climbers; leaves alternate, simple, entire; stipules absent; inflorescence an axillary cyme, spike, or raceme, rarely flowers solitary.

Genera 13, with about 100 species; natives of America, Africa, Asia, and Australia.

Calyx saucer-like, truncate ...	...	1. <i>Olax</i> Linn.
Calyx 4—5-toothed or -lobed ...	...	2. <i>Ximenia</i> Plum.

2131

1. *OLAX* Linn., Sp. Pl., ed. 1, p. 32 (1753)

Calyx small, saucer-shaped, truncate in flower, enlarging and almost enclosing the drupe in fruit. *Petals* 6, rarely 5, inserted on a disc, free from the calyx, free or slightly cohering, valvate in bud. *Stamens* commonly 3, sometimes more; filaments flattened, more or less adnate to the petals; anthers oblong; staminodes 5—12, 2-fid or 2-partite. *Ovary* superior, 1-chambered or 3-chambered at the base, with 3 ovules pendulous from a central placenta; style simple; stigma capitate or subcapitate. *Fruit* a globose or ellipsoid drupe, almost wholly enclosed in the calyx.

Glabrous trees, shrubs, or undershrubs, sometimes scandent; leaves alternate, often distichous, entire, sometimes petioled, articulated with the branches, sometimes very small and squamiform; inflorescence a short axillary spike or raceme, rarely flowers solitary.

Species about 68, natives of Australia, tropical Asia, Africa, Madagascar; 1 species recorded from the northern Transvaal. (Type: *O. zeylanica* Linn.)

2136

2. *XIMENIA* Linn., Sp. Pl., ed. 1, p. 1193 (1753)

Calyx small, 4—5-toothed or -lobed, unchanged in fruit. *Petals* 3—5, hypogynous, bearded within, valvate in bud. *Stamens* twice as many as the petals; filaments flattened; anthers linear-oblong, 2-theous; staminodes 0. *Ovary* superior, 3-chambered at the base or high up, with 3 ovules; style narrow-conical, grooved, shortly divided at the apex. *Fruit* a large ovoid or globose drupe.

Glabrous or tomentose shrubs or trees, with abortive spinescent branchlets; leaves alternate, entire, often fascicled; inflorescence a few- to many-flowered fascicle on abbreviated branches or a few- to many-flowered stalked axillary bracteate cyme or more rarely flowers solitary.

Species 10, natives of Africa; 2 species, each with a variety, recorded from the Transvaal and Natal. (Type: *X. americana* Linn.)

46. BALANOPHORACEAE

Plants monoecious or dioecious, rarely flowers bisexual. *Male flowers*:—*Perianth* 3—8-lobed, sometimes tubular, valvate in bud, sometimes absent. *Stamens* 1—2 in flowers without a perianth, otherwise equal in number and opposite the perianth-lobes; filaments free or connate; anthers either 2-theous and opening by longitudinal slits or several-theous and opening by terminal pores. *Female flowers* with a 3- to many-lobed globose or tubular perianth or perianth 0. *Disc* sometimes large and cushion-like. *Ovary* inferior, 1- (or at length 3-) chambered, with 1—3 pendulous ovules; style long or 0; stigma discoid or 3-lobed. *Fruit* indehiscent, separate or united into syncarpia. *Seed* with fleshy endosperm.

Herbs, parasitic on the roots of trees or shrubs, usually brightly coloured; leaves reduced and scale-like; inflorescence with unisexual flowers of one sex only and much-branched or with unisexual flowers of both sexes and simple; bracts present or 0.

Genera about 15; species about 50, widely distributed in tropical and sub-tropical regions.

Inflorescence simple, bearing male flowers above and female flowers below 1. *Mystropetalon* Harv.

Inflorescence much-branched, bearing flowers of one sex only 2. *Sarcophyte* Sparrm.

2155 1. MYSTROPETALON Harv., Gen. S. Afr. Pl., p. 418 (1838)

Plants monoecious. *Male flowers* with a 2-lipped perianth; the lower lip of 1 segment; the upper lip of 2 segments. *Stamens* 2, inserted on the upper perianth-segments; anthers 2-theous, dehiscing longitudinally. *Female flower* seated on a globular fleshy receptacle, with a 3-lobed or 3-parted urceolate or tubular perianth. *Staminodes* 2, very small or 0. *Ovary* completely embedded in and fused with the perianth-tube, 1- or 3-chambered, with 3 pendulous ovules; style columnar; stigma discoid or 3-lobed. *Fruit* a pseudo-nut, inserted on the enlarged receptacle. *Seed* solitary; embryo small, apical.

Fleshy parasitic herbs, usually on roots of species of *Proteaceae*; leaves fleshy, scale-like or sometimes linear; inflorescence a dense often clavate spike with the male flowers above and the female flowers below, very rarely all flowers female; flowers supported by 1 bract and 2 bracteoles, all coloured; female flowers ripening before the male.

Endemic; described species 2 (probably only 1), confined to the Malmesbury and Caledon districts of the Cape Province. (Type: *M. polemanni* Harv.)

2158 2. SARCOPHYTE Sparrm., Vet. Akad. Handl. Stockholm, vol. 27, p. 300, t. 7 (1776)

Plants dioecious. *Male flowers* with a 3-lobed perianth; tube short, solid; segments valvate. *Stamens* 3, inserted at the base of the perianth-lobes; anthers many-theous, opening by apical pores. *Ovary* none. *Female flowers* without a perianth, aggregated in small globular heads. *Ovaries* fused together; each ovary 1-chambered or at length 3-chambered through the protrusion of the placentas, with 1—3 pendulous ovules; stigmas sessile, peltate. *Fruit* a syncarp; the individual fruits of each flower head developing into a 1-seeded globose pseudo-berry. *Seed* subglobose; embryo central, globose.

Fleshy parasitic herbs; leaves bract-like, coloured; male and female inflorescences much-branched.

An African genus of 2 species; 1 species in eastern tropical Africa, the other occurring in the northern Transvaal, the Transkei to the Uitenhage district. (Type: *S. sanguinea* Sparrm.)

47. ARISTOLOCHIACEAE

Flowers bisexual. *Perianth* simple, variously produced above the ovary, equally or unequally 3-lobed or tubular and variously shaped; lobes valvate. *Stamens* 6 to many, inserted in 1 or 2 rows round the apex of the ovary or on a styler column; filaments free or scarcely distinguishable from the column; anthers free or adnate to the column, 2-theous, opening longitudinally. *Disc* 0. *Ovary* inferior or scarcely semi-superior, perfectly or imperfectly 4—6-chambered; ovules many in each chamber, with parietal placentation; style columnar, with 3 or more stigmas. *Fruit* a capsule or berry, sometimes crowned with the persistent perianth. *Seeds* numerous, various; embryo small; endosperm copious.

Herbs, rarely shrubs, often climbing; leaves alternate, petioled, often cordate, entire or 3—5-lobed; stipules 0; flowers medium-sized or large, rarely small, usually lurid, terminal, axillary, or lateral, solitary or arranged in racemes or cymes; bracts present or 0.

Genera 6, with over 500 species, chiefly tropical.

2174 ARISTOLOCHIA Linn., Sp. Pl., ed. 1, p. 960 (1753)

Perianth-tube linear-oblong or obovoid, more or less distinctly articulated above the ovary, inflated at the base, then contracted, hairy within; limb dilated, obliquely 1—2-lipped. *Stamens* 6, rarely 4 or 10 or many; filaments scarcely distinguishable from the column; anthers adnate to the column. *Ovary* inferior; style very short, with a 3- to 6-lobed stigmatic disc. *Fruit* a capsule, opening by 6, rarely 4—5, valves.

Shrubs or perennial herbs, often climbing; leaves petioled, entire or lobed, often cordate; petiole dilated and often with a stipule-like leaf in the axil; flowers axillary, fascicled or solitary or arranged in a short raceme; bracts present or 0.

Species about 486, found in all warm and temperate countries; 1 species recorded from the northern Transvaal. (Type: *A. rotunda* Linn.)

48. RAFFLESACEAE

Flowers regular, bisexual or unisexual. *Perianth* sometimes fleshy; tube adnate to the ovary and often produced above it, solid in the male flowers; lobes 3—10, imbricate or valvate, 1—2-seriate. *Stamens* 8 to many; filaments free or united; anthers surrounding a central column and dehiscing by apical slits or forming a ring inside the perianth-tube, with long sinous thecae. *Ovary* inferior or subinferior, 1-chambered or the placentas reaching nearly to the middle; ovules numerous, with parietal placentation or pendulous from the apex of the chamber (or chambers?); stigma sessile, flat or cushion-like, lobed or stigmas numerous on top of the ovary. *Fruit* a berry. *Seed* minute; endosperm oily; embryo small.

Fleshy parasites on the stems and roots of various trees and shrubs; leaves reduced to scales; flowers often large, solitary, rarely in spikes; bracts and bracteoles present.

Genera 7; species about 40, found in the warmer regions of both hemispheres.

NOTE.—J. Hutchinson, *The Families of Flowering Plants* and also the *Flora Capensis* use the family name *Cytinaceae*. The name *Rafflesiaceae* is, however, retained under the International Rules of Botanical Nomenclature.—E. P. P.

2180

CYTINUS Linn., Gen., ed. 6, p. 576 (1764)

Plants monoecious or dioecious. *Male flowers*:—*Perianth* 4—9-lobed, regular; tube tubular-campanulate or infundibuliform or none(?); lobes imbricate, with a large nectariferous cavity between each with papillose protuberences at the base. *Anthers* 8—12, connate in an exserted head, 2-theous, sometimes horseshoe-shaped, with the connectives produced; staminal-column with a row of papillose protuberences at the base. *Female flowers*:—*Perianth* almost absent. *Ovary* inferior, 1-chambered or more or less 6- or more-chambered by the projection of the parietal placentas; style columnar; stigma globose, grooved, with the apex obtuse or very shortly radially lobed.

Somewhat fleshy coloured herbs, parasitic on roots; stems short, thick, simple, bearing alternate coloured scales; inflorescence a simple terminal spike; flowers single, sessile or shortly pedicellate in the axil of bracts or bracts sometimes absent; bracteoles 2.

Species 9, natives of the Mediterranean, Mexico, and Africa; 3 species in South Africa; 1 species (undescribed) from the Pietersburg district of the northern Transvaal, the other 2 occurring from the Clanwilliam to the Riversdale district and one of which is also recorded from the Middelburg district. (Type: *C. hypocistis* (L.) Linn.)

49. HYDNORACEAE

Flowers solitary, regular, bisexual. *Perianth* 3—4- (rarely 5-) lobed, fleshy; tube short or long; lobes valvate. *Stamens* as many as and alternating with the perianth-lobes, inserted just below the mouth of the perianth; anthers with numerous thecae. *Ovary* inferior, 1-chambered, with many placentas hanging down from the top of the chamber or placentation parietal and often nearly meeting in the middle. *Fruit* baccate; seeds numerous, with copious endosperm.

Fleshy root-parasites with a creeping thallus; scale leaves 0.

Genera 2, with 8—9 species found in America and Africa.

2182 HYDNORA Thunb., Vet. Akad. Handl. Stockholm, vol. 38, p. 69, t. 2, figs. 1—3 (1775)

Flowers bisexual. *Perianth* 3—4- (rarely 5-) lobed, fleshy; tube short or long; lobes valvate, each bearing a pure white spongy body. *Stamens* as many as and alternating with the perianth-lobes, inserted in the tube; filaments united; anthers with numerous thecae forming a very short subcylindric ring on the perianth-tube or bent in an inverted V-shaped manner. *Stigma* cushion-shaped on top of the ovary, 3—5-lobed and bearing numerous radiating lamellae. *Fruit* subglobose, filled with gelatinous pulp. *Seed* globose, free in the pulp; endosperm horny.

Parasitic fungus-like plants with a fleshy warted subterranean rhizome; flowers large, with an unpleasant odour, arising singly from the rhizome.

An African genus of 14 species, one of which is found in Madagascar; 3 species recorded from South Africa, found from Namaqualand to the Kingwilliamstown district; 1 species recorded from the Transvaal. (Type: *H. africana* Thunb.)

50. POLYGONACEAE

Flowers regular, bisexual or unisexual with occasional bisexual flowers. *Bracts* membranous. *Perianth* 3—6-lobed, often enlarged and becoming membranous or hard in fruit, often persistent; tube short; lobes imbricate,

equal or unequal, sometimes in 2 rows, sometimes spiny. *Stamens* usually 6—9, inserted at the base of the perianth; filaments free or connate at the base; anthers 2-theous, opening lengthwise. *Disc* annular. *Ovary* superior, sessile, 3-angled or lenticular, 1-chambered, with a solitary basal sessile or stalked ovule; styles 2—3, distinct; stigmas dilated or capitate. *Fruit* a 3-cornered or lenticular nut, sometimes winged or with spines. *Seed* usually similar in shape to the nut, sometimes subterete; endosperm abundant; embryo usually more or less excentric; cotyledons flat, narrow or broad; radicle long.

Herbs, shrubs, or climbers, rarely trees; leaves alternate or rarely opposite, with the base of the petiole often dilated into a membranous sheath; flowers small, axillary or arranged in racemes, usually fascicled in the axils of persistent membranous bracts.

Genera about 30, with about 1,250 species, cosmopolitan.

- | | |
|---|---------------------------|
| 1. Persistent perianth with short sharp spines | 2 |
| Perianth without spines | 3 |
| 2. Spines near apex of "fruit"; perianth of female flowers not constricted above the ovary | |
| 1. <i>Emex</i> Neck. | |
| Spines near base of "fruit"; perianth of female or bisexual flowers constricted above the ovary; the upper portion of perianth persistent | |
| 4. <i>Oxygonum</i> Burch. | |
| 3. Inner perianth-segments much larger than the outer | |
| 2. <i>Rumex</i> Linn. | |
| Perianth-segments equal or subequal | 4 |
| 4. Perianth in female flowers constricted above the ovary and long persistent at the apex of the young fruit, not enclosing the fruit | |
| 4. <i>Oxygonum</i> Burch. | |
| Perianth in female flowers not constricted above the ovary, persistent, enclosing the fruit | 3. <i>Polygonum</i> Linn. |

2194

1. *EMEX* Neck., Elem., vol. 2, p. 214 (1790)

Plants monoecious. *Male flowers* pedicelled, with 5—6 equal perianth-segments. *Stamens* 4—6. *Female flowers* sessile, with a 6-lobed perianth enlarged and hardened in the fruit; tube ovoid, 3- or 6-angled in the fruit and more or less transversely ribbed between the angles; lobes in 2 series; the outer lobes spiny in fruit; the inner lobes obtuse or aristate. *Ovary* included in the perianth-tube, 3-angled; styles 3, short; stigmas dilated. *Fruit* enclosed in but free within the persistent perianth-tube, 3-angled. *Seed* subterete.

Rigid herbs; leaves alternate, petioled; ochreae more or less membranous, quickly splitting up or falling off; flowers in axillary fascicles or the upper, by the abortion of the leaves, appearing racemose.

Species 2, one of which occurs in South Africa (widely spread) and Australia, the other in the Mediterranean region. (Type: *E. spinosa* (L.) Campd.)

2195

2. *RUMEX* Linn., Sp. Pl., ed. 1, p. 333 (1753)

Flowers bisexual or unisexual. *Bracts* 0. *Perianth-segments* usually 6; the inner much enlarged in the fruit; the 3 outer unchanged. *Stamens* 6, inserted at the base of the perianth. *Ovary* 3-angled; styles 3; stigmas fimbriate. *Fruit* 3-angled, included in the persistent inner perianth-segments. *Seed* similar in shape to the fruit.

Herbs, more rarely shrubs; leaves alternate, often cordate or hastate; ochreae membranous; inflorescence a leafy or leafless terminal panicle; flowers in whorls; pedicels articulated.

Described species over 300, cosmopolitan, but most numerous in the temperate regions; 19 species recorded from South Africa, several of which are not native, widely distributed. (Type: *R. patientia* Linn.)

2201 3. POLYGONUM Linn., Sp. Pl., ed. 1, p. 359 (1753)

Flowers bisexual, very rarely occasionally unisexual. *Bracts* membranous. *Perianth* 5- (rarely 4-) lobed or -partite, persistent; segments equal or the 3 outer rather larger but little accrescent. *Stamens* usually 8, inserted near the base of the perianth; anthers with the 2 thecae united only by a short connective. *Ovary* 3-angled and with 3 styles, or lenticular and with 2 styles; stigmas capitate, usually entire. *Fruit* a trigonous or lenticular nut enclosed in the persistent perianth. *Seed* similar in shape to the nut.

Herbs or shrubs, erect, prostrate or scandent; leaves alternate; ochreae membranous, clasping the stem, often fringed with bristles; inflorescence often a terminal raceme, spike or panicle, or the flowers fascicled in the axils at the bracts; pedicels articulated.

Described species over 600, cosmopolitan; 18 species in South Africa widely distributed. (Type: *P. aviculare* Linn.)

2204 4. OXYGONUM Burch., Trav., vol. 1, p. 548 (1822)

Flowers bisexual, occasionally flowers unisexual. *Bracts* present. *Perianth* 5-lobed; tube in the bisexual flowers constricted above the ovary, enlarged and hardened in the fruit enclosing the nut, often with wings or spines on the three angles; the upper part of the perianth long persistent at the apex of the "fruit"; perianth in male flowers almost obsolete. *Stamens* 8, inserted on the perianth. *Ovary* included in the perianth-tube; styles 3, connate at the base; stigmas capitate. *Seed* erect, turbinate, 3-angled.

Annual or perennial herbs; leaves alternate, petioled, entire or pinnatifid; ochreae membranous, truncate; inflorescence a long lax raceme, with the flowers fascicled in the axils of the bracts.

Species about 30, mostly African; 7 species occur in South Africa, recorded from South West Africa, Griqualand West, the Transvaal, and Natal; 1 species recorded from the Stellenbosch district. (Type: *O. alatum* Burch.)

51. CHENOPODIACEAE

Plants sometimes monoecious or dioecious. *Flowers* bisexual or unisexual, usually regular. *Bracts* and *bracteoles* present or none, sometimes enlarged in the fruit. *Perianth* 3—5-lobed or absent from the female flowers, unchanged or enlarged in the fruit, sometimes with a horn or a spine at the back or winged. *Stamens* as many as the perianth-lobes and opposite to them, or fewer, hypogynous or perigynous; staminodes usually absent; filaments usually free, rarely connate at the base; anthers 2-thealous, with the connective sometimes produced at the apex. *Disc* none or rarely present and annular. *Ovary* superior, sometimes immersed in the base of the perianth, 1-chambered, with a single erect ovule on a short funicle or suspended from a long basal funicle; style short or long or 0; stigmas 2—5, free or connate at the base. *Fruit* usually enclosed in and falling off with the bladderly perianth. *Seed* erect or horizontal, lenticular, subglobose or reniform; embryo annular or spiral, surrounding the floury or fleshy endosperm (absent in *Salicornia*).

Annual or perennial herbs or shrubs, rarely small trees, glabrous, farinose, lepidote or hairy, sometimes fleshy; stems continuous or jointed, erect or decumbent; leaves alternate, rarely opposite, flat or cylindric, usually entire; stipules 0; inflorescence various, often of clusters of flowers arranged in spikes or panicles, sometimes dichotomously cymose or flowers solitary and axillary.

Genera about 60, with over 1,200 species, cosmopolitan; many are weeds of cultivation.

- | | |
|---|----|
| 1. Plants more or less fleshy, usually with the branches articulated | 2 |
| Herbs or woody shrubs | 4 |
| 2. Branches not articulated | |
| Branches articulated | 3 |
| 3. Seeds with endosperm | |
| Seeds without endosperm | |
| 4. Leaves ternate | |
| Leaves alternate, rarely opposite or subopposite | 5 |
| 5. Perianth-segments with a spine or horn on the back or horizontally winged (at least in fruit) | 6 |
| Perianth-segments not winged or with a spine or horn | 8 |
| 6. Perianth-segments silky (in the South African species) with a short spine at the back | |
| Perianth-segments with a horizontal wing | 7 |
| 7. Flowers bisexual or female by abortion; perianth 4—5-lobed; bracts and bracteoles 0 | |
| Flowers bisexual, perianth 3—4-lobed; bracteoles 2 | |
| 8. Bracts and bracteoles present in the bisexual or female flowers | 9 |
| Bracts and bracteoles 0 | 11 |
| 9. Styles 4... .. | |
| Styles 2... .. | 10 |
| 10. Flowers bisexual and male; bracts of bisexual flowers narrowed at the base, slightly enlarged in the fruit | |
| Plants monocious or dioecious; bracteoles of female flower dilated at the base and much enlarged in the fruit | |
| 11. Perianth unchanged in fruit; stigmas usually free, rarely connate below | |
| Perianth enlarged in fruit and almost closed at the mouth; stigmas connate at the base | |

7. *Halopeplis* Bunge.8. *Arthrocnemum* Moq.9. *Salicornia* Linn.10. *Suaeda* Forsk.5. *Chenolea* Thunb.6. *Kochia* Roth.11. *Salsola* Linn.12. *Lophiocarpus* Turcz.3. *Exomis* Fenzl4. *Atriplex* Linn.1. *Chenopodium* Linn.2. *Roubieva* Moq.

2223 1. CHENOPODIUM Linn., Sp. Pl., ed. 1, p. 218 (1753)

Flowers bisexual. *Bracts* and *bracteoles* 0. *Perianth* 5- (very rarely 1—3- or 4-) lobed; lobes sometimes keeled but not appendaged, unchanged in fruit. *Stamens* 5 or fewer, hypogynous or subperigynous; filaments sometimes connate at the base. *Disc* none or annular. *Ovary* usually depressed—globose, with a sessile ovule; style usually absent; stigmas 2—5, free, rarely connate below. *Fruit* ovoid and erect or globose and depressed, membranous or rather fleshy. *Seed* usually horizontal; embryo annular or nearly so, surrounding copious floury endosperm.

Herbs, rarely woody at the base, annual or perennial, often glandular-pubescent, rarely glabrous; leaves alternate, linear to deltoid, entire to pinnatifid;

flowers minute, in globose clusters which are solitary and axillary or inflorescence a terminal spike or raceme.

Species over 300, found chiefly in temperate regions, rare in the tropics; 11 species in South Africa, probably all introduced and widely distributed. (Type: *C. album* L.)

2223a **2. ROUBIEVA** Moq., Ann. Sc. Nat., vol. 2, ser. 1, p. 292, t. 10 (1834)

Flowers minute, bisexual or by abortion female. *Bracts* and *bracteoles* 0. *Perianth* urceolate, shortly 5-lobed, almost closed at the mouth in fruit; lobes rounded, enlarged in fruit. *Stamens* 5. *Disc* 0. *Ovary* globose, with a subsessile ovule; stigmas 2—5, connate at the base. *Fruit* subglobose, or oblong in outline, enclosed in the enlarged perianth, thinly membranous. *Seed* erect, orbicular, slightly compressed.

Branched glandular-puberulous herbs; leaves small, alternate, subsessile, sinuate-dentate or subpinnatifid; fruits stalked, subverticillate.

Two species found in tropical temperate America; 1 species recorded from Sicily. A single species (introduced) recorded from the Cape and Albany districts and from the Transvaal. (Type: *R. multifida* Moq.)

NOTE.—E. Ulbrich in *Pflanzenfam.*, vol. 16, c (1934), treats this as a section of *Chenopodium* L.—E. P. P.

2226 **3. EXOMIS** Fenzl ex Moq. Chenop. Enum., p. 49 (1840)

Flowers male and bisexual. *Male flowers* without bracts. *Perianth-segments* 5. *Stamens* 5. *Bisexual flowers* with 2 bracts. *Perianth-segments* 3—5, sometimes 0, very minute, slightly united below. *Staminodes* 0. *Styles* 2, free or united below. *Fruit* fleshy, sometimes enclosed in the enlarged bracts.

An ashy grey shrub; leaves alternate, entire; inflorescence a terminal spike or flowers in axillary clusters.

Endemic; species 1; recorded from the Cape to the Albany district; also found in Griqualand West, Calvinia, and the Orange Free State. (Type: *E. axyrioides* Fenzl ex Moq.)

2229 **4. ATRIPLEX** Linn., Sp. Pl., ed. 1, p. 1052 (1753)

Plants monoecious or dioecious. *Male flowers* without bracts or bracteoles. *Perianth* 3—5 partite. *Stamens* 3—5, inserted at the base of the perianth; filaments free or connate at the base. *Ovary* 0 or conical and rudimentary. *Female flowers* with 2 bracteoles; bracteoles enlarged in fruit, dilated at the base and connate into a 2-lipped cup, rarely quite separate. *Perianth* 0. *Disc* and *staminodes* rudimentary. *Ovary* ovoid or depressed-globose, with the ovule erect on a short funicle or suspended from the apex of a long basal funicle; stigmas 2, connate at the base. *Fruit* enclosed in the much enlarged bracteoles, membranous.

Herbs or shrubs, more or less scurfy or covered with lepidote scales; leaves alternate, rarely opposite, sessile or stalked; flowers in glomerules; glomerules either axillary and sessile or collected in spikes or panicles.

Species about 350, found in the temperate and tropical regions of the whole world; 12 species in South Africa widely distributed, and most of them introduced or cosmopolitan. (Type: *A. hastata* Linn.)

NOTE.—P. Aellen in *Engl. Bot. Jahrb.*, vol. 68, p. 423 (1937), describes a genus *Blackiella* and in the same work, vol. 70, p. 379 (1939), a genus *Monochlamys* (spelled "*Manochlamys*"), both genera based on species of *Atriplex*. It has not been possible to critically examine the species Aellen has included in the 2 genera, but a casual examination supports the view that there is little justification for the separation. Adamson and Salter, *Flora of the Cape Peninsula*, p. 355 (1950), have retained the genus *Monochlamys*.—E. P. P.

2238 5. CHENOLEA Thunb., Nov. Gen. Pl., p. 10 (1781)

Flowers bisexual and female. *Bracts* and *bracteoles* 0. *Perianth* 5-lobed, tube short, turbinate, globose or orbicular-depressed, villous or tomentose, rarely glabrous; lobes incurved, enlarged in fruit, produced into spines or horns on the back, rarely unarmed. *Stamens* 5, in the South African species shorter than the perianth-lobes; filaments (at least in the South African species) flattened, connate at the very base into an annular ring surrounding the base of the ovary; anthers ovate. *Disc* 0. *Ovary* ovoid; styles 2—3, connate below, with the connate portion passing into the ovary. *Fruit* enclosed in the crustaceous or coriaceous perianth. *Seed* orbicular.

Herbs or shrubs, erect or decumbent, usually hairy; leaves alternate, sessile, linear, lanceolate, or terete, entire; flowers small, axillary, solitary or clustered.

Described species about 26, the majority of which probably belong to other genera; 1 species in South Africa extending from the Cape to Natal; also recorded from the Cradock district and Bechuanaland. (Type: *C. diffusa* Thunb.)

2240 6. KOCHIA Roth., in Schrad. Journ. Bot., vol. 1, p. 307, t. 2 (1800-1)

Flowers bisexual and female. *Bracts* and *bracteoles* 0. *Perianth* 5-lobed; tube subglobose to urceolate, horizontally winged on the back; lobes incurved. *Stamens* 5. *Disc* 0. *Ovary* ovoid, attenuated into a slender style, with a subsessile ovule; stigmas 2—3. *Fruit* depressed-globose. *Seed* orbicular.

Herbs or shrubs, hairy, rarely glabrous; leaves alternate, rarely subopposite, sessile, linear to oblong, flat or terete, sometimes minute, entire; flowers axillary, small, sessile, solitary or clustered.

Species about 80, found in central Europe, temperate Asia, north Africa, and Australia. One species found in South Africa, recorded from the Albany district, several of the central districts, parts of the Orange Free State and from Namaqualand. (Type: *K. arenaria* Roth.)

2249 7. HALOPEPLIS Bunge, in Linnaea, vol. 28, p. 573 (1856)

Flowers bisexual, in groups of 3's in the axils of scales of the strobilus, connate and also adnate to the walls of the flower-bearing area. *Perianth* 4-angled, compressed, 3-toothed. *Stamens* 1—2; filaments very short. *Ovary* pear-shaped, subcompressed, with the ovule suspended from the apex of the funicle; stigmas 2. *Fruit* obovoid, compressed, attenuated at the apex, membranous. *Seed* minute, smooth or papillose.

Annual or perennial herbs, without articulated stems; leaves opposite or the upper scattered, very short, fleshy, subglobose or ovoid; flowering spikes alternate erect-spreading; bracts spirally placed, suborbicular, persistent.

Species 4, natives of the Mediterranean region and central Asia; 1 species recorded from the Cape Peninsula. (Type: *H. nodulosa* Bunge)

2255 8. ARTHROCNEMUM Moq., Chenopod. Enum., p. 111 (1840)

Flowers bisexual. *Perianth* funnel-shaped, shortly 3—4-lobed. *Stamens* 2—1. *Ovary* ovoid, with the ovule suspended from a basal funicle; style short, with 2 branches. *Seed* with endosperm.

Small branched saline shrubs; branches articulated, with short joints; leaves undeveloped; inflorescence a dense cylindric spike; flowers in clusters of threes, sunk in the hollows of the joints.

Species about 15, natives of the Old World; 1 species recorded from South West Africa. (Type: *A. ambiguum* Moq.)

2257 9. SALICORNIA Linn., Sp. Pl., ed. 1, p. 3 (1753)

Flowers bisexual or occasionally a few unisexual, in clusters of 3—7 immersed in hollows at the articulations of the branches, free or connate. *Perianth* fleshy, 3—4-toothed, *Stamens* 2, rarely 1. *Ovary* ovoid, attenuated at the apex, with a subsessile ovule; style lacerated at the apex or with 2 subulate stigmas. *Fruit* ovoid or oblong in outline, enclosed in the perianth. *Seed* compressed, hairy, without endosperm.

Herbs, often fleshy, with much reduced leaves, erect to decumbent; branches opposite, articulated; groups of flowers in short or long terminal cylindric spikes.

Described species 46, widely spread on sea coasts; 3 species in South Africa, found on the coast from South West Africa to Natal. (Type: *S. europaea* Linn.)

2261 10. SUAEDA. Forsk., Fl. Aegypt. Arab., p. 69, t. 18B (1775)

Flowers bisexual or unisexual by abortion, minute. *Bracts* present; bracteoles 2. *Perianth* 5-lobed or -partite; tube globose, turbinate or urceolate; lobes or segments equal or unequal, rarely all shortly winged. *Stamens* 5. *Disc* present or 0. *Ovary* broadly sessile at the base or adnate to the perianth-tube, with a subsessile ovule; stigmas 2—5. *Fruit* enclosed in the perianth. *Seed* various.

Herbs or shrubs, erect or prostrate; leaves in whorls of threes, fleshy, terete or semi-terete, rarely spatulate or flat, entire; flowers solitary or in clusters, with the clusters at length adnate to the base of the leaves.

Described species about 90, found on the sea shores throughout the world; 2 species recorded from South Africa, fairly widely distributed, being recorded from South West Africa, Bechuanaland, Griqualand West, the Zoutpansberg district of the Transvaal, the Fauresmith district in the Orange Free State, also from the Van Rhynsdorp to the Uitenhage district and several central districts. (Type: *S. baccata* Forsk.)

2269 11. SALSOLA Linn., Sp. Pl., ed. 1, p. 222 (1753)

Flowers bisexual, axillary. *Bracteoles* 2. *Perianth* 5- (rarely 4-) partite, in fruit with a broad horizontal wing above the middle. *Stamens* 5 or fewer. *Ovary* globose-depressed or broadly ovoid, narrowed into a short or long style, with the ovule subsessile or suspended from the apex of an elongated funicle; stigmas 2, rarely 3. *Fruit* enclosed in the perianth.

Herbs, shrubs, or subshrubs of various habit; leaves alternate, rarely opposite, sessile, sometimes broadly amplexicaul at the base, with the apex often pungent; flowers solitary or fascicled.

Species over 130, found chiefly in temperate Asia, north and tropical Africa, North and South America, 1 species recorded from Australia. Four species from South Africa are described in the *Flora Capensis* but a recent investigation, as yet unpublished, indicates that there are several more. They are chiefly confined to the central districts, Namaqualand, Griqualand West, the Orange Free State, and the Transvaal. (Type: *S. kali* Linn.)

2287 12. LOPHIOCARPUS Turcz., Bull. Soc. Nat. Moscow, vol. 16, p. 55 (1843)

(*Microtea* Sw. of Fl. Cap.)

Flowers bisexual. *Perianth* usually 5- (rarely 4-) partite; segments sometimes more or less unequal, not crested. *Stamens* normally 4, included or slightly exserted; filaments free; anthers 2-theccous, as long as or longer than the filaments. *Ovary* subglobose, smooth, glabrous, with a single ovule on a short basal funicle; styles 4, usually connate below. *Fruit* spherical,

enclosed in the persistent perianth, many-ribbed. *Seed* with a membranous testa; embryo curved; endosperm present.

Annual herbs sometimes woody at the base, usually branched; leaves alternate, entire, linear; flowers in groups of threes, each subtended by a bract and arranged in long very slender spikes.

An endemic genus of 4 species, found in South West Africa, Namaqualand, Bechuanaland, the Transvaal, and the Prieska, Vryburg, Hay, and Kimberley districts of the Cape Province. (Type: *L. polystachyus* Turcz.)

NOTE.—In the *Flora Capensis* the South African plants are referred to the genus *Microtea* Sw., but Heimerl (*Pflanzenfam.*, vol. 3, 1b, p. 8) and Walter (*Das Pflanzenreich*, vol. 4 (83), p. 126), retain the generic name *Microtea* Sw. for the South American plants and both authors place the genus in the family *Phytolaccaceae*; Hutchinson, *Families of Flowering Plants*, p. 133, also retains this genus in the same family. The South African plants are placed in the genus *Lophiocarpus* Swartz and in the family *Chenopodiaceae* by Volkens (*Pflanzenfam.*, vol. 3, 1a, p. 90).—E. P. P.

52. AMARANTACEAE

Flowers bisexual, rarely unisexual, many of them rudimentary or obsolete. *Perianth-segments* more or less dry and membranous, usually 5 (less commonly 3 or 4 or 1), usually united near the base, equal or unequal, imbricated. *Stamens* hypogynous, 5 (rarely 3 or 4 or 1), opposite the perianth-segments; filaments united at the base into a cup or tube, very rarely free to the base; staminodes usually present, alternating with the stamens, often fimbriated, toothed, or lacinated, long or short, sometimes very rudimentary, more rarely 0; anthers usually 2-theous, more rarely 1-theous. *Ovary* superior, 1-chambered; ovule usually solitary, rarely 2 or more, erect or suspended from the apex of a long or short basal funicle; style long or short or sometimes 0; stigma usually 1, sometimes 2-fid or more rarely 3—5-fid. *Fruit* a membranous utricle (rarely a berry), irregularly breaking up or circumscissile, often enclosed in the perianth. *Seed* lenticular, oblong or orbicular-reniform, compressed or rarely winged; embryo annular, surrounding copious endosperm.

Herbs or undershrubs, rarely trees or climbers; leaves simple, entire, opposite or alternate; stipules 0; inflorescence a spike, head or rarely a raceme; flowers small or minute; bracts and bracteoles usually hyaline, sometimes coriaceous, often spinescent.

Genera about 64; species about 800, natives of tropical and warm climates.

NOTE.—In examining the genera so far as the South African material is concerned, a doubt arises as to whether all the genera described are justified, e.g. the genera *Sericorema*, *Leucosphaera*, *Marcellipsis*, and *Seriococoma* all have hairy ovaries; staminodes present or absent; leaves opposite and alternate on the same plant; hairy perianth-segments. I am inclined to the view that further examination of all the available material might indicate that only a single genus is concerned.—E. P. P.

- | | |
|---|--------------------------------|
| 1. Stigmas 2, or 3, rarely 4 or 5 | 2 |
| Stigma 1, sometimes bifid | 6 |
| 2. Ovary with 2 or more ovules | 3 |
| Ovary with a single ovule | 4 |
| 3. Staminodes 0 | 1. <i>Celosia</i> Linn. |
| Staminodes present | 2. <i>Hermstaedtia</i> Reichb. |
| 4. Leaves opposite; anthers 1-theous | 19. <i>Gomphrena</i> Linn. |
| Leaves alternate; anthers 2-theous | 5 |
| 5. Perianth-segments glabrous | 3. <i>Amarantus</i> Linn. |
| All or some of the perianth-segments woolly | 13. <i>Aerva</i> Forsk. |

6. Ovary with a distinct horn at one side near the apex
 Ovary not horned 7
 7. *Cyphocarpa* Lopr.
7. Sterile flowers reduced to hooked spines 8
 Sterile flowers often reduced to spines which are not hooked, or sterile
 flowers absent 9
8. Staminodes present 10. *Cyathula* Blume
 Staminodes absent 12. *Pupalia* Juss.
9. Flowers clustered, usually with one or more perfect flowers surrounded
 by sterile flowers 10
 Flowers solitary on the axis of the inflorescence; sterile flowers absent 15
10. Ovary hairy 11
 Ovary glabrous 14
11. Leaves narrow-linear 5. *Sericorema* (Hook. f.) Lopr.
 Leaves not narrow-linear 12
12. Hairs on perianth-segments minutely scabrid
 Hairs on perianth-segments smooth... .. 11. *Leucosphaera* Gilg 13
13. Leaves usually opposite 6. *Marcellioopsis* Schinz
 Leaves usually alternate 4. *Sericocoma* Fenzl
14. Bracts long-villous giving the whole inflorescence a densely villous
 appearance... .. 8. *Nelsia* Schinz
 Perianth-segments woolly on the back 9. *Centema* Hook. f.
15. Flowers reflexed when mature 16. *Achyranthes* Linn.
 Flowers not reflexed 16
16. Branchlets shortly woolly; leaves reduced to scales or very small
 ($\pm \frac{1}{4}$ in.) 15. *Calicorema* Hook. f.
 Branchlets not woolly; leaves well developed 17
17. Flower clusters sessile in the axils of the leaves
 Flowers in terminal peduncled spikes 18. *Alternanthera* Forsk. 18
18. Staminodes present 17. *Pandiaka* (Moq.) Hook. f.
 Staminodes 0 14. *Psilotrichum* Blume

2292

1. *CELOSIA* Linn., Sp. Pl., ed. 1, p. 205 (1753)

Flowers bisexual. *Bracts* and 2 bracteoles present. *Perianth* scarious, 5-partite; segments oblong or lanceolate, obtuse or acute, erect in fruit. *Stamens* 5; filaments united at the base or half-way up into a membranous cup; staminodes 0 or very short; anthers 2-theous. *Ovary* ovoid or subglobose, with 2 or more ovules on elongated basal stalks; style short or long or 0; stigmas 2—3, subulate. *Fruit* ovoid or oblong, membranous, circumscissile. *Seeds* 2 or more, black, smooth, polished, usually erect, lenticular.

Herbs or undershrubs, erect or rambling; leaves alternate, attenuated into the petiole, simple or rarely lobed; inflorescence of dense terminal and axillary spikes

or the flowers fasciculate along the floriferous branchlets; flowers white, silvery, or rosy, sessile or shortly pedicellate.

Species about 100, found in the warmer regions of the globe; 3 species in South Africa, extending from the Transvaal to Natal and Pondoland; also recorded from South West Africa (*C. argentea* Linn.)

2293 2. HERMBSTAEDTIA Reichb., Consp., p. 164 (1828)

Flowers bisexual. *Bracts* 1; bracteoles 2. *Perianth* scarious, 5-fid; segments subequal. *Fertile stamens* 5; filaments united high up to form a tube; staminodes developing as processes alternating with and distinct from the fertile filaments, longer than the free portion of the filaments, sometimes fused partially or wholly with them; anthers 2-theous. *Ovary* ovoid, attenuated into a short or subelongate style; ovules numerous; stigmas 3 (rarely 2, 4 or 5). *Fruit* included in the perianth, ovoid, circumscissile. *Seeds* few or many, black, shining, erect, lenticular.

Herbs or undershrubs; leaves scattered, linear or spatulate-oblong, entire; inflorescence an elongated terminal spike (rarely a head); flowers white or rosy.

An African genus of about 26 species; 12 species occur in South Africa, found in Namaqualand, Griqualand West, Bechuanaland, the Orange Free State, the Transvaal, and Natal. (Type: *H. glauca* Reichb.)

2299 3. AMARANTUS Linn., Sp. Pl., ed. 1, p. 989 (1753)

Flowers unisexual or bisexual with occasional unisexual flowers. *Bract* 1; bracteoles 2. *Perianth* membranous; segments 5 (less commonly 1—3), equal or subequal, glabrous. *Stamens* usually 5 (rarely 1—3); filaments free at the base; staminodes 0; anthers 2-theous. *Ovary* ellipsoid, compressed, with a single subsessile erect ovule; style short or 0; stigmas 2—3, subulate or filiform. *Fruit* usually enclosed in the perianth, orbicular or ovoid, indehiscent or circumscissile, mostly membranous, simple or 2—3-toothed at the apex. *Seed* erect, globose or compressed, smooth and shining.

Annuals, erect or decumbent; leaves alternate, mostly simple, usually entire, petiolate; inflorescence a dense axillary head or a terminal paniculate spike; flowers white, green, rosy, or purplish.

Described species about 150, many found as common weeds in all the warmer parts of the world; 8 species recorded from South Africa, most of them introduced and widely spread over the Union. (Type: *A. cordatus* Linn.)

2305 4. SERICOCOMA Fenzl, in Endl. Gen. Suppl., vol. 2, p. 33 (1842) pro parte

Perfect flowers 1—2, with 1 or more sterile flowers usually reduced to spines. *Bracts* 1; bracteoles 2. *Perianth-segments* 5, thickly coriaceous or chartaceous, connate at the base, ovate or oblong-lanceolate, long hairy with smooth hairs; the inner the narrowest. *Stamens* 5; filaments united at the base into a short cup; staminodes usually on the rim of the cup between the stamens, rarely 0; anthers 2-theous. *Ovary* ovoid or oblong in outline, woolly or tomentose, with a single ovule suspended from the apex of an elongated funicle; style about as long as the ovary; stigma capitellate. *Fruit* included in the perianth, membranous, indehiscent. *Seed* suborbicular or oblong in outline, compressed.

Herbs or undershrubs of various habit; leaves linear or oblong, rarely obovate, sessile, entire, alternate or alternate and opposite on the same plant; inflorescence a terminal head or spike.

An African genus of about 23 species; 2 species in South Africa, found in Namaqualand, Calvinia, Griqualand West; also recorded from the Prince Albert and Graaff-Reinet districts. (Type: *S. trichinoides* Fenzl)

2307

5. SERICOREMA (Hook. f.) Lopr., in Engl. Bot. Jahrb., vol. 27, p. 39 (1899)

Perfect flowers 1—3, sessile and distant along the rachis, supported by 2 sterile flowers represented by a fascicle of recurved spines united into a stalk below. *Bracteoles* each enclosing a tuft of woolly hairs which cover the spines and which are enlarged in fruit so as almost to envelope the flowers. *Perianth* of 5 segments, connate at the base; segments acuminate or pungent. *Stamens* 5; filaments membranous at the base; anthers 2-theous; staminodes 0. *Ovary* ovoid, hairy or glabrous with a single erect ovule; style almost obsolete; stigma with a tuft of hairs. *Seed* red, doubled over itself, somewhat horseshoe-shaped, compressed, glabrous.

Erect herbs; leaves scattered, alternate and fasciculate, linear or oblong, sessile, entire; inflorescence a long lax spike.

Species 2; one recorded from tropical Africa; both found in South Africa and recorded from Griqualand West, the Orange Free State, the Transvaal, the Murraysburg, Prieska, Vryburg, and Upington districts of the Cape Province, also in South West Africa. (Type: *S. remotiflora* (Hook. f.) Lopr.)

2308

6. MARCELLIOPSIS Schinz, in Engl. & Prantl Pflanzenfam., vol. 16 c, p. 48 (1934)
(*Marcellia* Baill.)

Perfect flowers 1—3 in each cluster; sterile flowers 1 or more in each cluster, spinose but not hooked; both fertile and sterile flowers covered with smooth hairs. *Perianth-segments* oblong or linear. *Stamens* 5; filaments linear, united into a cup below; anthers 2-theous; staminodes 0. *Ovary* covered with woolly hairs, with a single ovule suspended from a basal funicle; style simple; stigma small, penicillate. *Seed* orbicular, flattened.

Undershrubs; leaves opposite or sometimes alternate and opposite, simple, entire; inflorescence a long dense spike of flower-clusters near the tops of the stem.

An African genus of 4 species; 2 species occur in South West Africa. (Type: *M. welwitschii* (Hook. f.) Schinz)

2309

7. CYPHOCARPA Lopr., in Engl. Bot. Jahrb., vol. 27, p. 42 (1899)

Perfect flowers 1—4, with 1—2 sterile flowers sometimes distinctly pungent at the apex. *Perianth-segments* 5, oblong or oblong-lanceolate, subequal or the outer longer, with broad membranous margins. *Stamens* 5; filaments united into a cup at the base; staminodes on the edge of the filament cup, alternating with the stamens, sometimes almost obsolete; anthers 2-theous. *Ovary* ovoid or obovoid, with a distinct horn on one side below its apex, hairy, with a solitary ovule suspended from a basal funicle; style simple much longer or shorter than the ovary; stigma capitate. *Seed* suborbicular, more or less compressed.

Herbs or shrubs of various habit; leaves opposite, linear or oblong, simple, entire, sessile or shortly petiolate; inflorescence an elongated or subglobose spike consisting of perfect and sterile flowers, densely hairy or glabrous.

An African genus of 5 species; 4 species occur in South Africa, recorded from South West Africa, Griqualand West, the Transvaal, the Orange Free State, Natal, and some of the north-western districts of the Cape Province. (Type: *C. trichinioides* (Fenzl) Lopr.)

2309b

8. NELSIA Schinz, in Vierteljahrsschr. Naturf. Ges. Zurich., vol. 56, p. 247 (1911)

Flowers in clusters; each flower subtended by a semi-orbicular chartaceous long villous bract acuminate at the apex; each flower-cluster surrounded by

chartaceous almost glabrous bracts. *Perianth-segments* 5, almost free, linear-lanceolate, with membranous margins. *Stamens* 5; filaments expanded and connate at the base into a cup, with fimbriate processes between the filaments; anthers 2-theous; staminodes present. *Ovary* obovoid, glabrous, with a solitary ovule from the apex of a long basal funicle; style simple; stigma minute, capitate.

Shrubs; leaves opposite, subsessile; inflorescence a more or less densely villous spike composed of the individual flower-clusters; the hairs minutely scabrid.

Species 1, recorded from South West Africa and also from Lake Ngami and Mossamedes. (Type: *N. quadrangula* (Engl.) Schinz)

2311 **9. CENTEMA** Hook. f., in Benth. et Hook. Gen. Plant., vol. 3, p. 31 (1880) partly

Perfect flowers 2—3, subtended by a bract and bracteoles; sterile flowers represented by hard rigid spines surrounded by white wool. *Perianth-segments* unequal in length, much hardened at the base, woolly on the back; the 2 outer a little broader than the inner. *Stamens* unequal; staminodes present or 0. *Ovary* glabrous, without a lateral horn; style simple; stigma shortly 2-fid. *Seed* oblong in outline, folded on itself.

Shrubby plants 2—3 ft. high; stems smooth or with obscure tubercles; leaves opposite, entire; inflorescence a pedunculate or sessile spike.

An African genus of 2 species; 1 species doubtfully recorded from South Africa. (Type: *C. kirkii* Hook. f.)

2312 **10. CYATHULA** Blume, Bijdr. Fl. Ned. Ind., vol. 11, p. 548 (1825) non Lour.

Perfect flowers 1—2, surrounded by sterile flowers whose perianth-segments are ultimately converted into rigid often hooked spines and are sometimes villous at the base. *Bracts* ovate, usually aristate; bracteoles 2. *Perianth-segments* 5, somewhat scarious, lanceolate or linear-oblong, subequal or the 3 inner narrower, hairy with minutely scabrid hairs or glabrous. *Stamens* 5, almost free or distinctly united at the base into a membranous cup; staminodes alternating with the stamens, linear or broad and truncate; anthers 2-theous. *Ovary* obovoid, glabrous, with a single ovule suspended from an elongated basal funicle; style filiform; stigma capitate. *Fruit* closely enclosed in the perianth. *Seed* oblong in outline.

Herbs, sometimes shrubby at the base, sometimes decumbent; leaves opposite, petioled, sessile or subsessile, usually hairy; inflorescence a spike or flowers arranged in a subglobose head, glabrous or hairy.

Species about 24, mostly found in Africa but also recorded from Ceylon, the Philippine Islands, and China; 4 species found in South Africa ranging from the Transvaal to Natal, the Orange Free State, also in the Elliot, Komgha, and Queens-town districts of the Cape Province. (Type: *C. prostrata* (L.) Blume)

2313 **11. LEUCOSPHERA** Gilg, in Engl. & Prantl Nachtr., p. 152 (1897)

Perfect flowers 1—5, with 2—5 sterile flowers. *Perianth-segments* 5, lanceolate-linear, with broad membranous margins on the lower half, long-acuminate, hairy with long minutely scabrid hairs; perianth of sterile flowers similar to that of perfect flowers, not spiny. *Stamens* 5; filaments linear, expanded and membranous at the base to form a membranous cup round the ovary; staminodes 0. *Ovary* hairy; style long, cylindric; stigma small, capitate.

A dwarf bush with a strong woody stem; branches silvery white; leaves mostly opposite, sometimes subopposite on the same plant; inflorescence a subglobose sessile head, hairy.

Species 1, found in South West Africa, but also recorded from the Kuruman and Gordonia districts of the Cape Province. (Type: *L. bainesii* (Hook. f.) Gilg)

2314 12. PUPALIA Juss., Ann. Mus. Paris, vol. 2, p. 132 (1803)

Perfect flower 1—2, surrounded by sterile flowers which are reduced to stellate bunches of hooked spines which are woolly at the base. *Perianth-segments* lanceolate, very shortly mucronate, loosely woolly. *Stamens* 5; filaments expanded and connate at the base to form a membranous ring round the ovary; anthers 2-theous; staminodes 0. *Ovary* subglobose, with a single ovule suspended from a long basal funicle, glabrous; style cylindric; stigma capitate. *Seed* black, subglobose.

Herbs or undershrubs, trichotomously branched (always ?); leaves opposite, petiolate, broad, entire; inflorescence a simple or branched spike, sometimes the flower-clusters remotely spaced.

Species about 6, found in Africa and India; 2 species recorded from South Africa, extending from the Transvaal to the Uitenhage district; also recorded from Griqualand West. (Type: *P. lappacea* (L.) Juss.)

NOTE.—There appears to be some justification for sinking the genus *Cyathula* Blume under the above genus. The only difference appears to be the presence or absence of staminodes and in a genus this character is not always constant. Schinz (*Pflanzenfam.*, vol. 16 c. p. 45 (1934)) for example describes the genus *Centema* Hook f. as being without staminodes.—E. P. P.

2317 13. AERVA Forsk., Fl. Aegypt. Arab., p. 170 (1775)

(*Arthraerua* (O. Kuntze) Schinz)

Flowers bisexual with occasional unisexual flowers or plants dioecious(?). *Bracts* present; bracteoles 2. *Perianth* usually of 5 segments; segments equal or the 3 inner narrower; all or the 3 inner only softly woolly. *Stamens* usually 5; filaments usually unequal, united at the base into a shallow basin or deep cup; staminodes alternating with the stamens, sometimes linear and acute and almost as long as the filaments, sometimes short and truncate; anthers 2-theous. *Ovary* with a single ovule suspended from an elongated basal funicle, glabrous; style shorter or longer than the ovary; stigmas 2 or capitate. *Fruit* membranous, enclosed in the perianth. *Seed* ovoid or reniform.

Herbs or undershrubs, sometimes semi-succulent with articulated branches; leaves usually alternate, entire, flat or much reduced on the species with articulated branches; inflorescence a dense cylindric terminal and axillary woolly spike or the spikes sometimes arranged in a loose panicle.

Species about 10, found in the warmer parts of Africa and Asia; 3 species recorded from South Africa, found in South West Africa, British Bechuanaland, Ngamiland, the Transvaal, Orange Free State, and the north-western districts of the Cape Province. (Type: *A. javanica* Juss (?))

NOTE.—The species on which Schinz based the genus *Arthraerua* is a typical desert species. In floral structure it does not differ from *Aerva*.—E. P. P.

2324 14. PSILOTRICHUM Blume, Bijdr. Fl. Ned. Ind., p. 544 (1825)

Flowers bisexual. *Bract* 1; bracteoles 2, sometimes $\frac{1}{2}$ as long as the perianth-segments, sometimes linear with broad membranous margins, so that they appear ovate. *Perianth-segments* 5, sometimes gibbous at the base, usually hairy without. *Stamens* 5; filaments equal or unequal, flattened below and united at the base into a shallow saucer; staminodes 0. *Ovary* subglobose or oblong in outline, glabrous, with a single ovule suspended from a long

basal funicle; style slender; stigma capitate or bifid. *Fruit* membranous, indehiscent, enclosed in the hardened base of the perianth. *Seed* lenticular.

Herbs or shrubs, trichotomously branched; leaves opposite, ovate or elliptic-lanceolate, entire; inflorescence a solitary axillary spike, head or panicle.

Species 14, mostly African; a few species found in India and Ceylon; 1 species recorded from the Transvaal, Zululand, and Natal. (Type: *P. trichotomum* Blume)

2325 **15. CALICOREMA** Hook. f., in Benth. et Hook. Gen. Plant., vol. 3, p. 34 (1880)

Flowers bisexual. *Bracts* membranous, shorter than the perianth; bracteoles 2, $\frac{1}{2}$ as long as the perianth or shorter. *Perianth* stiffly membranous, 5-partite; segments clothed on the back with straight silky white hairs; the 3 inner segments somewhat narrower than the 3 outer. *Stamens* 5, united at the base into a membranous cup or shallow saucer; staminodes present, oblong and much shorter than the filaments and inflexed over the short staminal-tube or linear and almost as long as the filaments; anthers 2-thealous. *Ovary* ovoid or turbinate, glabrous or densely woolly, with a single ovule suspended from an elongated basal funicle; style cylindric; stigma capitellate.

Shrubby with the younger branches shortly and densely woolly (one species resembling *Cadaba juncea* in habit); leaves occasionally opposite, mostly alternate, distinct or much reduced; inflorescence a spike at the end of the branches, sometimes short and compact, sometimes the flowers scattered.

Species 2, both found in South West Africa and one of which is also recorded from tropical Africa. (Type: *C. capitata* Hook. f.)

2328 **16. ACHYRANTHES** Linn., Sp. Pl., ed. 1, p. 204 (1753)

Flowers bisexual, deflexed when old. *Bract* often ovate, long-acuminate and about $\frac{3}{4}$ as long as the perianth; bracteoles 2, similar to the bract. *Perianth-segments* 4—5, acute or aristate, becoming hard and ribbed. *Stamens* usually 5, sometimes 2—4; filaments connate at the base; anthers 2-thealous; staminodes toothed or with a toothed scale at the back or fimbriate. *Ovary* turbinate or obovoid, glabrous, with a single ovule from the apex of an elongated basal funicle; style cylindric, sometimes several times longer than the ovary or short or almost 0; stigma capitellate.

Herbs; leaves opposite, entire, petiolate; inflorescence a slender simple spike sometimes almost 12 in. long, or the spike arranged in a panicle.

Species about 15, found in the warm parts of the Old World; 2 species recorded from South Africa and widely distributed. (Type: *A. aspera* Linn.)

2328a **17. PANDIAKA** (Moq.) Hook. f., in Benth. et Hook. Gen. Plant., vol. 3, p. 35 (1880)

(*Achyropsis* (Moq.) Hook. f.)

Flowers bisexual. *Bracts* membranous, about $\frac{1}{2}$ as long as or much shorter than the perianth; bracteoles 2, about $\frac{1}{2}$ as long as or much shorter than the perianth. *Perianth* 4—5-partite, not becoming hardened at the base or somewhat hardened; segments shining, oblong, subacute or obtuse, glabrous or hairy. *Stamens* 4—5; filaments connate at the base; anthers 2-thealous; staminodes quadrate or semi-orbicular, truncate, sometimes fimbriate or produced with 2—3-forked processes longer than the filaments. *Ovary* ovoid, glabrous, with a single ovule suspended from a long basal funicle; style cylindric, longer or shorter than the ovary; stigma capitellate. *Fruit* enclosed in the perianth. *Seed* ovoid or lenticular.

Erect trichotomously branched undershrubs; leaves opposite or fascicled, entire, sessile or shortly petioled; inflorescence of axillary and terminal spikes which are sometimes arranged in a paniculate manner.

An African genus of about 16 species; 3 species recorded from South Africa and found in the Transvaal, Natal, down to the Uitenhage district; also recorded from South West Africa. (Type: *Achyranthes capitata* Moq. = *P. capitata* (Moq.) Hook. f.)

NOTE.—The difference between these 2 genera as given in literature is so slight that there is no justification for separating them. Both are closely allied to *Achyranthes* which differs principally in the reflexed flowers of the mature inflorescences.—E. F. F.

2335 18. *ALTERNANTHERA* Forsk., Fl. Aegypt. Arab., p. 28 (1775)
(*Telanthera* (R. Br.) Graebner)

Flowers bisexual. *Bract* present; bracteoles 2; bracts and bracteoles equal to or shorter than the perianth. *Perianth-segments* 5, equal, subequal, or very unequal. *Stamens* 2—5; filaments connate at the base; anthers 1-theous; staminodes present or absent. *Ovary* suborbicular or obovate or subcordate in outline, usually compressed, glabrous, with a solitary ovule suspended from the apex of a long basal funicle; style very short or almost absent; stigma capitate. *Fruit* compressed, sometimes with thickened or winged margins.

Herbaceous or slightly woody, sometimes prostrate and creeping; leaves opposite; flowers in axillary often clustered head-like spikes.

Species about 170, found chiefly in Australia and tropical America; 3 species (introduced) recorded from South Africa, widely distributed.

2338 19. *GOMPHRENA* Linn., Sp. Pl., ed. 1, p. 224 (1753)

Flowers bisexual. *Bracts* present; bracteoles 2, concave, keeled or winged or crested on the back. *Perianth* 5-partite or 5-fid, usually hardened and woolly at the base; segments equal or unequal. *Stamens* 5; filaments united into a tube or flask-shaped body sometimes as long as the perianth, with 5 emarginate or bifid lobes at the top; anthers 1-theous; staminodes usually absent. *Ovary* turbinate or subglobose, with a solitary ovule suspended from the apex of a basal funicle; style short or long; stigmas 2, rarely 3. *Fruit* ovoid or oblong in outline, compressed. *Seed* lenticular, smooth.

Erect or prostrate herbs, usually thickened at the nodes, hairy; leaves opposite, sessile or subsessile, entire; inflorescence a spike, often head-like, often solitary and sessile at the end of the branches.

Species about 90, natives of Central and South America. A single species, which occurs as a cosmopolitan weed, is found widely distributed in South Africa. (Type: *G. globosa* Linn.)

53. NYCTAGINACEAE

Flowers bisexual, rarely unisexual, regular, sometimes dimorphous. *Bracts* free or connate into an involucre, often brightly coloured. *Perianth* mono-phyllous, small, herbaceous or petaloid, persistent, often accrescent, 3—5-lobed or -toothed, sometimes circumsissile above the base. *Stamens* 1—30, usually unequal; filaments free or connate into a cup at the base; anthers 2-theous, dorsifixed, included or exserted. *Ovary* superior, 1-chambered, with a solitary erect ovule; style filiform; stigma small, simple or multifid. *Fruit* membranous, indehiscent, enclosed in the persistent base of the perianth-tube, ribbed, sulcate, or winged, sometimes glandular. *Seed* erect; testa adhering to the fruit wall; endosperm soft or floury; embryo straight or curved; radicle inferior.

Herbs, shrubs, or trees, sometimes scandent; leaves usually opposite, entire; stipules 0; inflorescence a terminal or axillary cyme, panicle or corymb.

Genera 30 with about 190 species, chiefly American, a few in India, the Mascarene and Pacific Islands.

- | | | |
|---|--------------------------------|---|
| 1. Perianth 4—5-lobed to the middle; fruit winged | 3. Phaeoptilum Radkl. | |
| Perianth not lobed to the middle; fruit ribbed, angled or glandular | | 2 |
| 2. Fruit not glandular | 2. Boerhaavia Linn. | |
| Fruit glandular | | 3 |
| 3. Flowers unisexual | 4. Pisonia Linn. | |
| Flowers bisexual | 1. Commicarpus Standley | |

2347a 1. COMMICARPUS Standley, Contrib. U.S. Nat. Herb., vol. 12, p. 373 (1909)

Flowers bisexual. *Perianth* shortly funnel-form; tube with many or few prominent glands on the portion surrounding the ovary. *Stamens* 2—5, exserted; filaments connate at the base; anthers 2-theous. *Ovary* shortly stalked; style long exserted; stigma (at least in the South African species) capitate. *Fruit* enclosed in the persistent base of the perianth which is rather obscurely ribbed and covered with few or many large mucilaginous glands.

Perennials with long and slender climbing or reclining stems; leaves opposite, entire; inflorescence usually an umbel, with the flowers on moderately long pedicels.

Species 6, found in Africa and North America; 2 species recorded from South Africa. (Type: *C. scandens* (L.) Standley)

2349 2. BOERHAAVIA Linn., Sp. Pl., p. 3 (1753)

Flowers bisexual. *Bracts* small, often deciduous, rarely whorled and involucrate. *Perianth* 5-lobed; tube long or short, cylindric, constricted above the ovary, with the lower part persistent and becoming hardened to enclose the fruit and the upper part petaloid and deciduous; lobes plicate. *Stamens* 1—5, more or less exserted, unequal; filaments connate below. *Ovary* shortly stalked, oblique; style filiform; stigma peltate. *Fruit* enclosed in the lower portion of the perianth which is 3—5-ribbed or angled, rarely 3—5-winged, glabrous or pubescent. *Seed* with the testa adhering to the fruit wall; embryo hooked.

Annual or perennial erect or diffuse herbs, sometimes woody at the base; leaves opposite, often in unequal pairs, petioled, entire or sinuate; inflorescence an umbel, cyme, head, or raceme, sometimes flowers solitary; bracts usually minute.

Species about 30, spread throughout the tropics and warm temperate regions, mostly found in North America; 4 species recorded from South Africa, recorded from the Transvaal, Zululand, Natal, the Orange Free State, Prieska, Bechuana-land, Namaqualand, and South West Africa. (Type: *B. repens* Linn.)

2351 3. PHAEOPTILUM Radlkofer, in Abhandl. Naturw. Ver. Bremen, vol. 8, p. 435 (1884)

Flowers bisexual, occasionally unisexual. *Bracts* small, free. *Perianth* campanulate, 4- (rarely 5-) lobed; lobes ovate, spreading. *Stamens* 8, of 2 different lengths; the longer shortly exserted; filaments filiform, connate at the base. *Ovary* shortly stalked; style included; stigma truncate, penicillate. *Fruit* enclosed in the persistent base of the perianth which becomes prominently 4-winged. *Seed* erect; embryo hooked.

Spinous shrubs with grey or yellowish bark; leaves linear, alternate or so me what fasciated; flowers solitary.

An African genus of 1 species, found in tropical Africa and recorded from the Kimberley, Hay, Herbert, Prieska, and Gordonias districts of the Cape Province; also from Fauresmith in the Orange Free State, and from South West Africa. (Type: *P. spinosum* Radlk.)

2354

4. PISONIA Linn., Sp. Pl., ed. 1, p. 1026 (1753)

Plants dioecious, rarely monoecious, or rarely flowers bisexual. *Bracts* 2—3, not forming an involucre. *Male flowers*:—*Perianth* 5-lobed or 5-toothed; tube campanulate; lobes or teeth induplicate-valvate, erect or spreading. *Stamens* 5—10, exserted; filaments connate below into a tube or ring. *Female flowers*:—*Perianth* similar to that of the male, but the tube usually enlarged at the base. *Ovary* sessile, elongate; style included or exserted; stigma capitate or peltate, penicillate. *Fruit* enclosed in the hardened base of the perianth which is 5-ribbed or 5-angled and with stalked viscid glands on the ribs or angles. *Seed* with a hyaline testa adnate to the fruit-wall; embryo straight.

Trees or shrubs, erect or subscandent, unarmed or with axillary spines; leaves mostly opposite, usually petioled, entire; inflorescence a subsessile or pedunculate paniculate cyme.

Species about 30, mostly tropical; a single species recorded from Natal. (Type: *P. aculeata* Linn.)

54. PHYTOLACCACEAE

Flowers bisexual or unisexual. *Calyx* usually of 5 sepals, more rarely sepals 4, membranous or with membranous or fimbriated margins. *Petals* usually absent or minute, sometimes 3—5. *Stamens* usually 3—8, sometimes 10, sometimes many (25); filaments free or connate into a cup at the base, sometimes in bundles of 2—3; anthers 2-theous. *Ovary* superior, 1—3-chambered, sometimes 3—5-chambered and 3—5-lobed, or 6—12-chambered, or the gynaecium of 2—12 more or less free carpels, with a solitary basal ovule in each carpel or ovary-chamber; styles simple, 2—5 or as many as the carpels, sometimes decurrent on the inner face of the carpel; stigmas capitate or filiform. *Fruit* more or less membranous, dehiscent or indehiscent, more rarely fleshy, sometimes separating into 1-seeded cocci, sometimes warted or spiny, rarely winged. *Seed* sometimes granulated; embryo annular or hooked; endosperm present.

Herbs, more rarely undershrubs, rarely trees; leaves alternate, opposite, or verticillate, sometimes petioled, lax or densely covering the branches, rarely somewhat succulent; stipules small or 0, more rarely large and fimbriated; inflorescence a spike, raceme, umbel, or cyme, or flowers solitary or in fascicles; bracts usually present.

Genera 23; species about 90, natives of the Mediterranean region, the Canary Islands, central Asia, South America, South Africa, Australia, East and West India.

NOTE.—J. Hutchinson, *The Families of Flowering Plants*, places several of the following genera in the family Molluginaceae, while Pax and Hoffman in *Pflanzenfam.* (vol. 16, c) place them in the family Aizoaceae.—E. P. P.

- | | | |
|---|---------------------------|---|
| 1. Leaves closely packed on the branches, so that branches appear cylindric;
flowers hidden in axils of the leaves | 2. <i>Polypoda</i> Presl | |
| Leaves not as above, if ericoid and closely packed then branches appear-
ing 4-angled; flowers not hidden in the axils of the leaves | ... | 2 |
| 2. Fruit with a circular wing | ... | |
| Fruit without a circular wing | ... | |
| | 4. <i>Semonvillea</i> Gay | 3 |

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|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 3. Gynaecium of 2—12 free carpels | ... | ... | ... | ... | ... | ... | ... | ... | 4 |
| Ovary 1—5-chambered | ... | ... | ... | ... | ... | ... | ... | ... | 5 |
| 4. Fruit membranous, papillose or muricate; styles decurrent on the inner angles of the carpels | | | | | | | | | |
| Fruit fleshy; styles apical on the carpels | | | | | | | | | |
| 7. <i>Giesekia</i> Linn. | | | | | | | | | |
| 6. <i>Phytolacca</i> Linn. | | | | | | | | | |
| 5. Ovary 1-chambered | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Ovary 2—5-chambered | ... | ... | ... | ... | ... | ... | ... | ... | 6 |
| 1. <i>Adenogramma</i> Reichb. | | | | | | | | | |
| 6. Ovary 2-chambered; petals 3—5 | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Ovary 3—5-chambered; petals 0 | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 3. <i>Limeum</i> Linn. | | | | | | | | | |
| 5. <i>Psammotropha</i> E. & Z. | | | | | | | | | |

2374 **1. ADENOGRAMMA** Reichb., Icon. Exot., vol. 2, p. 3, t. 109 (1827)

Flowers bisexual. *Perianth* 5, membranous, obtuse. *Stamens* 5, shorter than the perianth; filaments subulate, dilated and connate into a cup at the base; anthers short, oblong. *Ovary* ovoid or conical, 1-chambered, with a solitary basal ovule; style short, filiform; stigma somewhat capitate. *Fruit* ovoid, conical-subulate or dagger-shaped, often gibbous at the base, dehiscent or indehiscent, smooth or granular, sometimes glandular. *Seed* ovoid, straight or curved; embryo hooked; endosperm fleshy.

Diffuse herbs, with dichotomous branches; leaves verticillate, those of the perennial branches imbricate; stipules minute or 0; inflorescence a terminal or axillary cyme or umbel or flowers in fascicles.

Endemic; species 7, extending from South West Africa to the Uitenhage district. (Type: *A. mollugo* Reichb.)

2375 **2. POLPODA** Presl, Polpoda, Nov. Plant. Gen. (1829)

Flowers bisexual. *Perianth* of 4 hyaline segments; segments somewhat obovate, shortly fimbriate-lacerate. *Stamens* 4, hypogynous, far exserted; filaments filiform; anthers linear. *Ovary* compressed, 2-chambered, with a single ovule in each chamber; style 2-partite, with linear stigmatose branches. *Fruit* a capsule, with a membranous pericarp, broadly obcordate, 2-locular. *Seed* black, somewhat compressed, globose-reniform, granulated; embryo annular.

Diffuse undershrubs about 12 in. high, woody at the base, with somewhat cylindric branches due to the packed leaves; leaves alternate, small, oblong-lanceolate, appressed to the stem, becoming recurved at the apex; stipules large, hyaline, somewhat shortly fimbriate, adnate on either side to the lower margin of the leaf.

Endemic; species 1, recorded from the Piquetberg and Cape districts. (Type: *P. capensis* Presl)

2376 **3. LIMEUM** Linn., Syst., ed. 10, p. 995 (1759)

Flowers bisexual or unisexual. *Sepals* 5, sometimes more or less unequal, ovate, lanceolate, or linear, herbaceous, with membranous margins. *Petals* 3—5, oblong, obovate, or spatulate, sometimes minute or absent. *Stamens* 5—10, hypogynous, sometimes imperfect; filaments subulate, dilated at the base, free, or united into a basin. *Ovary* subglobose, 2-chambered, with a single basal ovule in each chamber; styles 2, much shorter than the ovary, with capitate or clavate stigmas or linear and stigmatose, sometimes styles connate at the base. *Fruit* black, dividing into two 1-seeded cocci; cocci indehiscent, wingless, smooth, rugose, or armed with short spines. *Seed* orbicular; embryo annular.

Annual or perennial herbs or woody, prostrate or erect, sometimes with a deep tap root, sometimes viscid; leaves alternate, linear, lanceolate, or obovate, entire; stipules 0; inflorescence a dense terminal or subaxillary cyme; flowers small, greenish; bracts 3.

Species about 26, natives of Africa, Arabia, and India; 8 species in South Africa, widely distributed. (Type: *L. africanum* Linn.)

2376a 4. SEMONVILLEA Gay, Bull. Feruss., vol. 18, p. 412 (1829)

Flowers bisexual. *Sepals* 5, somewhat unequal, herbaceous, with membranous margins. *Petals* 5, subrotund, clawed or 0. *Stamens* 5—7; filaments dilated at the base, connate into a shallow basin; anthers large, oblong. *Ovary* compressed, semi-orbicular in outline, 2-chambered, with a single basal ovule in each chamber; style 2, unequal, longer than the ovary, stigmatose above. *Fruit* orbicular, dry, formed of 2 separable 1-seeded indehiscent plano-convex cocci which are winged round the margin; wings with bifid radiating veins, membranous between the veins.

Glabrous branched annuals; leaves alternate, narrow-linear; stipules 0; inflorescence a large lax paniculate cyme, with the flowers solitary and distant on the branches, or in a more or less compact cyme; bract present.

Species 3, natives of Africa; 2 species in South Africa, found in South West Africa, the districts of Vryburg, Kuruman, Prieska, Kimberley, of the Cape Province, Fauresmith and Bethulie in the Orange Free State, Lichtenburg, Waterberg, Zoutspansberg and Pretoria in the Transvaal. (Type: *S. pterocarpa* Gay)

2379 5. PSAMMOTROPHA E. & Z., Enum., p. 286 (1826)

Flowers bisexual. *Sepals* 5, herbaceous, with membranous margins, obtuse. *Petals* 0. *Stamens* 5; filaments subulate, free, sometimes situated on the rim of a shallow basin; anthers oblong. *Ovary* subglobose, 3—5-lobed, 3—5-chambered, with a single basal ovule in each chamber; styles 3—5, free, short, recurved or connate at the base, stigmatose at the apex. *Fruit* 3—5-lobed, 3—5-locular, loculicidal. *Seeds* subglobose, granulate; embryo annular; endosperm subfleshy.

Rigid perennial herbs or small woody undershrubs, sometimes creeping and rooting at the nodes; leaves usually rigid, linear or subulate or ericoid, often densely crowded at the base of the stem or crowded higher up on the stem, sometimes closely packed so that the stem appears to be 4-angled; stipules small or 0; inflorescence an axillary cyme or umbel or flowers in densely flowered clusters.

Endemic; species 6, extending from South West Africa through the coastal belt to Natal, the eastern Orange Free State, the Transvaal, and Basutoland. (Type: *P. parvifolia* E. & Z.)

2380 6. PHYTOLACCA Linn., Sp. Pl., ed. 1, p. 441 (1753)

Flowers bisexual or unisexual and the plants dioecious. *Sepals* united at the base only; segments equal, oblong, spreading or later becoming reflexed. *Stamens* 5—25; filaments subulate, free, sometimes adnate to the base of the sepals or seated on the rim of a narrow ring; anthers oblong. *Gynaecium* of 4—12 free carpels, which may sometimes be slightly connate, with a solitary basal ovule in each ovary; styles stigmatose. *Fruit* depressed-globose, fleshy. *Seed* reniform, compressed, beaked or obtuse at the base; embryo annular; endosperm present.

Herbs or small shrubs, rarely trees, erect or scandent; leaves alternate, entire, usually distinctly petioled; inflorescence a dense raceme; pedicels bracteate and with 2 bracteoles.

Species about 20, tropical and subtropical, mainly natives of America, a few in Africa, eastern Asia, the Himalaya, and Asia Minor; 4 species in South Africa

extending from the Transvaal, Natal, Basutoland, and the Orange Free State to the Uitenhage district. (Type: *P. americana* Linn.)

2382 **7. GIESEKIA** Linn., Mant., vol. 2, p. 554 (1771)

Flowers bisexual, seldom unisexual. *Sepals* 5, herbaceous, with narrow membranous margins. *Petals* 0. *Stamens* 5—15, hypogynous, free, alternating singly or in parcels of 2—3 with the sepals; filaments subulate, somewhat dilated at the base; anthers oblong. *Gynaecium* of 2—5 free carpels, with a solitary basal ovule in each ovary; styles short, decurrent on the inner angles of the carpels, stigmatose on the inner side. *Fruit* of 5 free compressed membranous papillose or mucicate 1-seeded indehiscent carpels. *Seed* compressed, subreniform, granulated; embryo annular.

Small annual, rarely perennial, herbs; leaves opposite, alternate, or in false whorls, linear or spatulate; stipules 0; inflorescence a lax or dense axillary cyme.

Species 4 or 5, natives of Africa, Arabia, and East India; 3 species in South Africa, extending from the Transvaal, Natal, Griqualand West, the Orange Free State to the Cradock district; also recorded from the Prieska district. (Type: *G. pharnaceoides* Linn.)

55. AIZOACEAE

Flowers regular, bisexual or rarely plants dioecious with occasional bisexual flowers. *Calyx* of 4—5 sepals or divided into 4—6 lobes down to the ovary or produced into a short tube above the ovary. *Petals* many, free, or connate to form a tube, or absent. *Stamens* definite or indefinite; filaments subulate, erect or inflexed; anthers 2-theous. *Ovary* superior, half-superior, or inferior, 2- to many-chambered, with usually many ovules in each chamber; styles as many as the ovary-chambers, free or rarely united; sometimes styles 0 and stigma inconspicuous on top of the ovary. *Fruit* a capsule or drupaceous. *Seeds* solitary or many; embryo more or less curved; endosperm scanty or copious, starchy or very rarely fleshy.

Annual or perennial herbs or shrubs, sometimes prostrate or very dwarf and without a distinct stem; leaves opposite, alternate, or whorled, sometimes connate at the base only or more or less completely connate to form the plant-body, often fleshy and succulent; stipules absent or present; flowers solitary or variously arranged.

Described genera 165; described species about 2,380, found in most tropical and subtropical countries.

NOTE.—That the genus *Mesembryanthemum* of Linnaeus was not a natural one was recognized as far back as 1821 by Haworth (*Revisiones Plantarum Succulentarum*) who proposed separate genera for some of the plants then included in *Mesembryanthemum*. After the lapse of 100 years, the late Dr. N. E. Brown in a series of articles in the *Gardener's Chronicle*, commencing in 1921, paid special attention to the group. Brown stated that "the more I study *Mesembryanthemum*, the more do I become convinced that, as at present constituted, it is rather of the nature of a natural order than of a single genus". In a series of seed germination investigations, Brown recognized 4 distinct groups in which the cotyledonary stage differed. When a comparable group, e.g. the genus *Euphorbia* which has varied growth-forms, was similarly examined by Dr. R. A. Dyer prior to 1930, he found that there was no difference in the cotyledonary stage of the succulent species he examined and that the specific growth-form took shape after the cotyledonary stage. Brown at least proved that the Linnean genus *Mesembryanthemum* contained elements which are different fundamentally. At one stage Brown stated that the character of the capsule does not seem to be a reliable or promising one for distinguishing genera or sections, and later he stated that the flowers, notwithstanding a general similarity, differ considerably in structure when carefully examined. Brown, in further articles, proposed additional generic names and in this procedure he was followed by other workers who, so far as can be ascertained, worked independently of each other, and generic names followed one another in rapid succession. To add to the confusion, and in spite of incomplete information, the generic names suggested by one worker were sunk into synonymy by another. Not having paid special attention to the group as a whole previously and not being competent to pass judgment of earlier workers, I have accepted the generic names given by H. Jacobsen in *Gattung Mesembryanthemum* (1933), who at least attempted to correlate the existing literature. Jacobsen lists 146 genera of which number 42 are monotypic. When nearly 30% of the segregated genera is monotypic, the suspicion is created that many of them are not justified. It is abundantly clear also that the large number of described species, numbering 2,374, is not justified. The only publication I have come across in which an attempt has been made to monograph a complete genus is of the genus *Lithops*, by the late

Professor G. C. Nel in 1946. Since sending the typescript to the printers, I came across a publication by H. Jacobsen and Dr. O. H. Volk (see Bibliography for reference) in which a Key to the known genera is given. Mr. H. Herre, Curator of the University Botanic Gardens, Stellenbosch, forwarded me a typescript copy of a Key to the genera prepared by him and Dr. O. H. Volk.—E. P. P.

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|---|-----------------------|-------------------------|---------------------|------------------------|-----|-----|-----|-----|----|
| 1. Petals 0 | ... | ... | ... | ... | ... | ... | ... | ... | 2 |
| Petals many or represented by staminodia | ... | ... | ... | ... | ... | ... | ... | ... | 13 |
| 2. Ovary inferior... | ... | ... | ... | 13. Tetragonia Linn. | | | | | |
| Ovary superior | ... | ... | ... | ... | ... | ... | ... | ... | 3 |
| 3. Sepals free | ... | ... | ... | ... | ... | ... | ... | ... | 4 |
| Calyx with a distinct tube, sometimes very short | ... | ... | ... | ... | ... | ... | ... | ... | 7 |
| 4. Hypogynous disc present | ... | ... | 3. Pharnaceum Linn. | | | | | | |
| Hypogynous disc 0 | ... | ... | ... | ... | ... | ... | ... | ... | 5 |
| 5. Stipules 0; funicle with an apical appendage | 2. Glinus Linn. | | | | | | | | |
| Stipules present; funicle without an apical appendage | ... | ... | ... | ... | ... | ... | ... | ... | 6 |
| 6. Stipules membranous, fugaceous and undivided | | | | | | | | | |
| | 1. Mollugo Linn. | | | | | | | | |
| Stipules adnate to the sheathing base of the petioles | 4. Hypertelis E. Mey. | | | | | | | | |
| 7. Fruit transversely dehiscent at the middle | ... | ... | ... | ... | ... | ... | ... | ... | 8 |
| Fruit loculicidally dehiscent | ... | ... | ... | ... | ... | ... | ... | ... | 9 |
| 8. Ovary usually 3—5-chambered | ... | 7. Sesuvium Linn. | | | | | | | |
| Ovary 1—2-chambered or carpels more or less free | 8. Trianthema Linn. | | | | | | | | |
| 9. Ovules 2 to many in each ovary-chamber | ... | ... | ... | ... | ... | ... | ... | ... | 10 |
| Ovule solitary in each ovary-chamber | ... | ... | ... | ... | ... | ... | ... | ... | 11 |
| 10. Stamens 5; stipules fimbriate-lacerated | 5. Coelanthum E. Mey. | | | | | | | | |
| Stamens many; stipules 0 | 12. Aizoon Linn. | | | | | | | | |
| 11. Stamens 4—5 | ... | ... | ... | 9. Plinthus Fenzl | | | | | |
| Stamens 8—40 | ... | ... | ... | ... | ... | ... | ... | ... | 12 |
| 12. Leaves connate at the base | ... | 11. Acrosanthes E. & Z. | | | | | | | |
| Leaves not connate at the base | ... | 10. Galenia Linn. | | | | | | | |
| 13. Ovary superior* | ... | ... | ... | 6. Orygia Forsk. | | | | | |
| Ovary inferior or half inferior | ... | ... | ... | ... | ... | ... | ... | ... | 14 |
| 14. Annual plants | ... | ... | ... | ... | ... | ... | ... | ... | 15 |
| Perennial plants | ... | ... | ... | ... | ... | ... | ... | ... | 21 |
| 15. Ovary 4—6- (rarely 7-) chambered | ... | ... | ... | ... | ... | ... | ... | ... | 16 |
| Ovary 9—12-chambered | ... | ... | ... | ... | ... | ... | ... | ... | 19 |
| 16. Capsule with 4—6- (rarely 7-) valves | ... | ... | ... | ... | ... | ... | ... | ... | 17 |
| Valves separating into segments so that the capsule appears to be 10-valved | ... | ... | ... | 10-Hydrodea N. E. Br. | | | | | |
| 17. Placentation axile | ... | ... | ... | Cryophytum N. E. Br. | | | | | |
| Placentation parietal | ... | ... | ... | ... | ... | ... | ... | ... | 18 |
| 18. Leaves flat | ... | ... | ... | Skiaophyllum L. Bol. | | | | | |
| Leaves never flat | ... | ... | ... | Mesembryanthemum Linn. | | | | | |

19. Style funnel-shaped, with 9—12 papilla-like stigmas on the surface of its rim **Hymenogyne** Haw.
Style 0 or, if present, not funnel-shaped 20
20. Calyx lobed down to the top of the ovary; ovules arising from the floor of the ovary-chambers **Carpanthea** N. E. Br.
Calyx slightly produced into a saucer-like limb; ovules arising from the wall of the ovary-chambers **Apatesia** N. E. Br.
21. Acaulescent plants; stems not evident, without distinct internodes ... 22
Plants branched, with more or less distinct internodes between the leaves 52
22. Leaves 2 to each plant growth, or 4 when making a new growth, sometimes completely fused to form a solid plant body, or leaves truncate and without chlorophyll at the apex 23
Leaves more than 2 to each plant growth 36
23. Body of plant embedded in the soil **Lithops** N. E. Br.
Body of plant not embedded in the soil 24
24. Leaves club-shaped, truncate and without chlorophyll at the apex ... 25
Leaves not as above 26
25. Ovary 5-chambered **Frithia** N. E. Br.
Ovary 10—11-chambered **Fenestraria** N. E. Br.
26. The two leaves fused into one fleshy body 27
The two leaves not completely fused 28
27. Style long or short, rarely almost absent **Conophytum** N. E. Br.
Style 0 **Oophytum** N. E. Br.
28. Ovary 7—24-chambered 29
Ovary 5—7- (very rarely 9-) chambered 30
29. Calyx produced above the ovary into a short tube **Argyroderma** N. E. Br.
Calyx not produced into a tube 29a
- 29a. Ovules with parietal placentation **Pleiospilos** N. E. Br.
Ovules on floor of ovary-chambers **Vanheeridia** L. Bol.
30. Calyx 5-lobed 31
Calyx 6—7- (very rarely 8-) lobed 32
31. Placentation parietal **Antimima** N. E. Br.
Ovules from floor of ovary-chamber **Rhinephyllum** N. E. Br.
32. Two calyx-lobes longer than the others, acutely keeled and with the keel continued down the pedicel **Gibbaeum** Haw.
Calyx-lobes not as above 33
33. Ovary partly immersed in the very stout clavate top of the pedicel **Muiria** N. E. Br.
Ovary not immersed in the top of the pedicel 34
34. Ovary inferior 35
Ovary wholly superior **Gibbaeum** Haw.
35. Stigmas diverging; pedicel flat, acutely 2-angled **Dinteranthus** Schwant.
Stigmas erect; pedicel not 2-edged **Diplosoma** Schwant.

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| 36. Calyx subequally 8-lobed | Perissolobus N. E. Br. | |
| Calyx usually 4—6-lobed | | 37 |
| 37. Ovary 5—6-chambered | | 38 |
| Ovary 7- or more-chambered | | 45 |
| 38. Calyx produced into a short tube or cup above the ovary | | 39 |
| Calyx divided down to its junction with the ovary | | 41 |
| 39. Ovules on the floor of the ovary-chambers | Nelia Schwant. | |
| Ovules with axile placentation | | 40 |
| 40. Leaves 10—12 together, crowded into small radical rosettes | | |
| Leaves with large tubular sheaths clasping one another and conceal- | Phylolobus N. E. Br. | |
| ing the short stem | Dactylopsis N. E. Br. | |
| 41. Leaves covered with a waxy secretion | Cerochlamys N. E. Br. | |
| Leaves not covered with a waxy secretion | | 42 |
| 42. Calyx subequally 5-lobed | | 43 |
| Calyx subequally 6-lobed | | 44 |
| 43. Filaments of inner stamens slightly bearded at the base | | |
| Filaments not bearded | Prepodesma N. E. Br. | |
| | Bylia N. E. Br. | |
| 44. Filaments bearded at the base | Titanopsis Schwant. | |
| Filaments not bearded | Titanopsis Schwant. | |
| 45. Filaments bearded at the base | | 46 |
| Filaments not bearded | | 47 |
| 46. Calyx subequally 5-lobed | Aistocaulon von Poelln. | |
| Calyx subequally 7-lobed | Lapidaria Schwant. | |
| 47. Calyx produced above the ovary into a short tube or cup | | 48 |
| Calyx divided to its junction with the ovary | | 49 |
| 48. Leaves in dense rosettes of 3—4 pairs to a growth | | |
| Leaves not as above | Rabiea N. E. Br. | |
| | Pleiospilos N. E. Br. | |
| 49. Leaves of each pair dissimilar | Glottiphyllum Haw. | |
| Leaves of each pair similar | | 50 |
| 50. Leaves velvety-puberulous | Deilanthe N. E. Br. | |
| Leaves dotted or pustulate but not velvety-puberulous | | 51 |
| 51. Some of the calyx-lobes with membranous margins | | |
| Calyx-lobes without membranous margins | Nananthus N. E. Br. | |
| | Cheiridopsis N. E. Br. | |
| 52. Leaves withering and persisting as spines or as hardened fragments | | |
| Leaves not as above | Amoebophyllum N. E. Br. | |
| | | 53 |
| 53. Calyx produced above the ovary into a short tube or into a broad and shallow saucer-shaped limb | | 54 |
| Calyx lobed down to its junction with the ovary | | 61 |
| 54. Ovary 8—10-chambered | Piquetia N. E. Br. | |
| Ovary 4—6-chambered | | 55 |

55. Ovules arising from the floor of the ovary-chambers
 Placentation axile or parietal *Mossia* N. E. Br. 56
56. Leaves withering to a skeleton and persistent *Sceletium* N. E. Br.
 Leaves not as above 57
57. Leaves with a tubular embracing sheath *Aspazoma* N. E. Br.
 Leaves without embracing sheaths 58
58. Plants papillose on all green parts ... *Sphalmanthus* N. E. Br.
 Plants not papillose 59
59. Leaves petioled *Platythyra* N. E. Br.
 Leaves sessile 60
60. Petals free *Erepisia* N. E. Br.
 Petals united at the base into a short tube *Prenia* N. E. Br.
61. Branches constricted at the nodes into short and often bead- or button-
 like joints *Monilaria* Schwant.
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62. Ovules arising from the floor of the ovary-chambers 63
 Placentation axile or parietal 64
63. Ovary 5-chambered *Saphesia* N. E. Br.
 Ovary 15—20-chambered *Cephalophyllum* Haw.
64. All or some of the filaments bearded at the base 65
 Filaments not bearded 70
65. Ovary 5-chambered 66
 Ovary more than 5-chambered 67
66. Flowers solitary or in a many-flowered inflorescence
 Inflorescence a bracteate cyme 2—5 times dichotomously divided
 Ruschia Schwant. *Mestoklema* N. E. Br.
67. Pedicel of flower persisting after flowering and becoming hardened and
 sometimes spinescent *Leipoldtia* L. Bol.
 Pedicel not as above 68
68. Flowers on long pedicels *Conicosia* N. E. Br.
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69. Leaves not united at the base; calyx 4-lobed *Enarganthe* N. E. Br.
 Leaves united at the base; calyx 5-lobed *Smicrostigma* N. E. Br.
70. Leaves united at the base and there bearing a ring of deflexed hairs
 Brownanthus Schwant.
 Leaves not as above 71
71. Petals united at the base into a short tube 72
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72. Leaves petioled *Aptenia* N. E. Br.
 Leaves sessile *Psilocaulon* N. E. Br.
73. Fruit succulent *Carpobrotus* N. E. Br.
 Fruit a dry capsule 74

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| 74. Leaves amplexicaul at the base ... | Dicrocaulon N. E. Br. | |
| Leaves not amplexicaul | | 75 |
| 75. Leaves minutely crystalline-papillose | Mitrophyllum Schwant. | |
| Leaves not as above | | 76 |
| 76. Stamens few (about 25) in one series | Ectotropis N. E. Br. | |
| Stamens numerous | | 77 |
| 77. Ovary 5-chambered | Circandra N. E. Br. | |
| Ovary 6—10-chambered | | 78 |
| 78. Stamens collected into a compact column or cone; staminodes few | Octopoma N. E. Br. | |
| Stamens spreading; staminodes numerous in 3—4 rows | Khadia N. E. Br. | |

2387

1. MOLLUGO Linn., Sp. Pl., ed. 1, p. 89 (1753)

Flowers bisexual. *Calyx* 5-parted, with membranous margins. *Petals* 0. *Stamens* 3—10, sometimes up to 19, hypogynous, those of the inner row alternating with the sepals or, when fewer than 5, then opposite the ovary-lobes; filaments filiform-subulate, sometimes slightly expanded at the base, free or connate into a narrow ring below; anthers linear-oblong. *Ovary* 3—5-chambered, with many axile ovules in each chamber; styles 3—5, linear, sometimes more or less ovate and fleshy. *Fruit* a membranous capsule included in the calyx, 3—5-angled, loculicidally 3—5-valved. *Seeds* numerous on short ascending funicles, reniform, smooth or granulated, without an appendage at the apex of the funicle.

Annual or perennial herbs, or woody at the base, erect or procumbent; leaves alternate or whorled, sometimes all basal, entire or toothed; stipules membranous, fugaceous, undivided; inflorescence an axillary umbellate cyme or flowers in clusters.

Species about 19, found in all warm countries; 5 species in South Africa recorded from South West Africa, Namaqualand, the Clanwilliam district, several of the north-western districts of the Cape Province, the Transvaal, the Orange Free State, and Basutoland. (Type: *M. verticillata* Linn.)

2388

2. GLINUS Linn., Sp. Pl., ed. 1, p. 463 (1753)

Flowers bisexual. *Calyx* 5-parted, with membranous margins, glabrous or stellately villous. *Petals* 0. *Stamens* 3 to many at the base of the calyx, free or united in bundles; the outer sometimes abortive and resembling petals; filaments subulate or linear; anthers oblong. *Ovary* 3—5-chambered, with many axile ovules in each chamber; styles 3—5. *Fruit* a membranous capsule, 3—5-angled, 3—5-furrowed, loculicidally 3—5-valved. *Seeds* numerous, fixed to long ascending funicles, reniform, smooth or tubercled, with an appendage at the apex of the funicle.

Annual herbs or subfruticose, glabrous or with stellate hairs; leaves alternate or in false whorls, entire or toothed; stipules 0; flowers in clusters or umbels opposite the leaves or solitary at the nodes.

Species about 10; 3 species recorded from South Africa, found in South West Africa, Namaqualand, the Clanwilliam district, and also in the Transvaal and Natal. (Type: *G. lotoides* Linn.)

2389

3. PHARNACEUM Linn., Sp. Pl., ed. 1, p. 272 (1753)

Flowers bisexual. *Calyx* 5-parted, subequal, with membranous margins, persistent, sometimes conspicuously horned at the back below the apex.

Petals 0. *Stamens* 3—5, alternating with the sepals; filaments linear to filiform; anthers oblong or globose. *Hypogynous disc* annular or basin-shaped, sometimes 3—5-fid. *Ovary* subglobose, or oblong in outline, sometimes 3—5-lobed, 3—5-chambered, with many ovules in each chamber; styles 0; stigmas 3, obovate, oblong, or cuneate, sometimes petaloid, rarely elongated. *Fruit* a membranous capsule, 3—5-locular, loculicidally 3—5-valved. *Seeds* 4—8 in each loculus, globose-lenticular or more or less discoid and with the margin acute, or subglobose with a raised dorsal line, without an appendage at the apex of the funicle; testa often shining, smooth, granulate, or reticulate.

Small slender undershrubs or herbs, rarely annual, sometimes with the general appearance of a species of *Anacampseros*; leaves alternate or in false whorls, sometimes radical, linear, needle-shaped, obovate, or spatulate, often with a bristle at the apex; stipules lacerated or deeply fringed; inflorescence an axillary or terminal peduncled racemose cyme, umbel, or head.

Endemic; species about 20, distributed from South West Africa, through the coastal belt to Natal; also found in the Orange Free State, the Transvaal, Basutoland, and Griqualand West; rare in the central districts. (Type: *P. incanum* Linn.)

2390 **4. HYPERTELIS** E. Mey., ex Fenzl in Ann. Wien. Mus., vol. 1, p. 352 (1836)

Flowers bisexual. *Sepals* 5-parted, with membranous margins. *Petals* 0. *Stamens* 3—5 or 12—16 in 2 rows, with the 5 outer alternating with the sepals, sometimes 20—30 in 3—5 bundles opposite the dissepiments of the ovary, sometimes stamens 10. *Hypogynous disc* 0. *Ovary* 3—5-chambered, with many ovules in each chamber; style 0; stigmas 3—5, fleshy, recurved. *Fruit* a capsule, ellipsoid, 3—5-furrowed, 3—5-locular, loculicidally dehiscent into 3—5 valves. *Seed* lenticular or pyriform, smooth, shining, without an appendage at the apex of the funicle.

Annual or perennial herbs or small undershrubs; leaves alternate and crowded or verticillate, glaucous, filiform or linear, blunt, somewhat fleshy, dilated and amplexicaul at the base; stipules adnate to the sheathing base of the petiole, tooth-like, not lacerated; flowers in umbels on long peduncles, rarely shorter than the leaves.

Endemic; 5 species described, though probably not all specifically distinct; distributed from South West Africa, through Bechuanaland to the Orange Free State and the Transvaal; also recorded from the Middelburg, Cradock, Queenstown, Uitenhage, and Riversdale districts of the Cape Province. (Type: *H. spergulacea* E. Mey.)

2391 **5. COELANTHUM** E. Mey., ex Fenzl in Ann. Wien. Mus., vol. 1, p. 353 (1836)

Flowers bisexual. *Calyx-tube* campanulate; lobes 5, obtuse, with membranous margins. *Petals* 0. *Stamens* 5, perigynous, inserted between the lobes of the calyx; filaments short; anthers linear, sagittate. *Hypogynous disc* 0. *Ovary* oblong in outline, 3-chambered, with many ovules in each chamber; styles 3, linear, papillose. *Fruit* a capsule, included in the calyx, membranous or chartaceous, linear-oblong in outline, 3-angled, 3-locular, loculicidally 3-valved, many-seeded. *Seeds* subglobose, acute, reticulated, without an appendage at the apex of the funicle.

Annual herbs with scape-like dichotomous stems; leaves in a radical rosette, linear-lanceolate or spatulate, blunt or aristate; the stem leaves verticillate; stipules fimbriate-lacerated; inflorescence a lax terminal dichotomous raceme-like cyme.

Endemic; species 2, recorded from South West Africa, Namaqualand, and the Cape district. (Type: *C. grandiflorum* E. Mey.)

2393 6. ORYGIA Forsk., Fl. Aegypt. Arab., p. 103 (1775)

Flowers bisexual. *Sepals* 5, ovate, cuspidate, with membranous margins. *Petals* (staminodes?) many, of oblong to almost subquadrate membranous or hyaline scales, shorter or longer than the stamens, connate at the base into a circular rim or very shallow basin. *Stamens* many, attached to the inner face or rim of basin formed by the (staminodes?); filaments linear; anthers oblong or almost quadrate, often longer than the filaments. *Ovary* somewhat compressed, suborbicular in outline, 5-chambered, with many ovules in each chamber; styles 5, filiform. *Fruit* a capsule, included in the calyx, surrounded at the base by the ring or basin formed by the (staminodes?), 5-locular, loculicidally 5-valved, many-seeded. *Seeds* reddish or black.

Diffuse herbs with a long tap-root; branches from a woody base; leaves alternate, mostly obovate, mucronate, glaucous, glabrous; stipules 0; inflorescence a lax few-flowered terminal cyme or cymes opposite the leaves.

Species 1, native of Africa, Arabia, and east India. In South Africa the species extends from the Transvaal to the Transkei; also found in South West Africa, in the Prieska district and Griqualand West. (Type: *O. decumbens* Forsk.)

2394 7. SESUVIUM Linn., Syst., ed. 10, p. 1058 (1759)

(*Diplochonium* Fenzl)

Flowers bisexual. *Calyx-tube* turbinate, sometimes very short; lobes 5, sometimes somewhat fleshy, oblong, obtuse, sometimes beaked behind the apex. *Petals* 0. *Stamens* 5 or many, situated on the calyx-tube; filaments linear, sometimes connate at the base; anthers didymous. *Ovary* superior, 2—5-chambered, with several or many ovules in each chamber; styles 2—5, longitudinally papillose. *Fruit* a capsule, membranous, 2—5-locular, transversely dehiscent in the middle, with several or many seeds in each loculus. *Seeds* subreniform, smooth or ribbed and with the ribs sometimes glandular; embryo annular.

Herbs or undershrubs, erect or prostrate, sometimes papillose; leaves opposite, sub-fleshy, linear or oblong, expanded and membranous at the base; stipules 0; flowers axillary, sessile or stalked, solitary or clustered, or rarely the inflorescence subcymose; bracts 2 or 0.

Species about 6, natives of the coastal belt of the tropics; 3 species in South Africa, recorded from South West Africa and the Zoutpansberg district of the Transvaal. (Type: *S. portulacastrum* Linn.)

NOTE.—I doubt very much whether there is any generic difference between *Sesuvium* Linn. and *Trianthema* Linn. The transversely dehiscent fruit is common to them both. Until a large range of specimens can be examined, I have not felt justified in combining them.—E. P. P.

2395 8. TRIANTHEMA Linn., Sp. Pl., ed. 1, p. 223 (1753)

Flowers bisexual. *Calyx-tube* short or subelongated and campanulate; lobes 5, short or large, with membranous margins, often arched, coloured within, with a short blunt horn at the back of the apex. *Petals* 0. *Hypogynous disc* 0. *Stamens* 5—8, sometimes unequal, solitary or fascicled; filaments linear or linear-lanceolate; anthers often large and semi-orbicular, with the thecae often separated. *Ovary* superior, sessile or sometimes on a short stout stalk, truncate, sometimes with a collar at the apex, sometimes papillose, 1—2-chambered or gynaeceum of 1—2 more or less free carpels, with 1 or few ovules in each ovary-chamber or carpel; styles 2 or style 1, longitudinally papillose. *Fruit* a membranous or coriaceous capsule, 1—2-locular, with 1 or more seeds, transversely dehiscent in the middle. *Seeds* subreniform, often ridged, glandular, or papillose, with an elongated funicle.

Herbs, rarely undershrubs, usually diffuse or prostrate, glabrous, pubescent, or subpapillose; leaves opposite, petioled, obovate, ovate, or linear, entire, with a membranous expansion at the base of the petiole; stipules 0; flowers axillary, solitary, or in cymes or fascicled, sessile or peduncled, rarely subsapiculate on the terminal branches; bracteoles 2.

Species about 22, natives of the warm parts of Asia, Africa, Australia, and western India; 4 species in South Africa, recorded from South West Africa, the Lydenburg, Zoutpansberg, and Pretoria districts of the Transvaal, the Fauresmith district of the Orange Free State, the Prieska and Vryburg districts of the Cape Province; also found in Natal. (Type: *T. portulacastrum* Linn.)

2398 **9. PLINTHUS** Fenzl, in Ann. Wien. Mus., vol. 2, p. 288 (1839)

Flowers bisexual. *Calyx-tube* campanulate or subcampanulate, 4—5-lobed; lobes silky. *Petals* 0. *Stamens* 4—5, inserted on the calyx-tube, alternating with the calyx-lobes; filaments exserted or included. *Ovary* 2—3- (rarely 4-) chambered, papillose or pubescent, with a single ovule in each chamber; styles 2—3, rarely 4. *Fruit* a capsule, densely papillose, 2—3- (rarely 4-) locular. *Seed* subreniform, often ribbed, with an elongated funicle; embryo curved.

Small low shrubs, silky, densely leafy; leaves small, opposite or alternate, ovate or more or less 3-angled, silky; stipules 0; flowers 1—3, axillary, sessile or subsessile.

Endemic; species 5, found in South West Africa, the Prieska, Kenhardt, Gordonias, Kimberley, and Middelburg districts of the Cape Province; also in the Fauresmith district of the Orange-Free State. (Type: *P. cryptocarpus* Fenzl)

2399 **10. GALENIA** Linn., Sp. Pl., ed. 1, p. 359 (1753)

Flowers bisexual. *Calyx-tube* turbinate, hemispherical, or shortly campanulate; segments 4—5, spreading, usually hairy. *Petals* 0. *Stamens* 8—10, in 4—5 sets, alternating with the sepals, unequal; filaments linear; anthers didymous. *Ovary* superior, 2—5-chambered, rarely 1-chambered, usually glandular, with a solitary pendulous ovule on a long funicle from the apex of each chamber; styles 2—5, linear, papillose. *Fruit* a capsule, compressed or 2—5-angled, 2—5-locular, rarely 1-locular and then indehiscent, loculicidally 2—5-valved, 1-seeded in each loculus. *Seed* oblong in outline or reniform, on a long funicle which is attached to the apex of the loculus; embryo curved.

Herbs or branched undershrubs, glabrous, tomentose, pubescent, scaly, or papillose; leaves opposite or alternate, small, entire; stipules 0; flowers small, axillary, sessile or stalked, sometimes in cymes at the ends of the branches.

Endemic; 27 species described but probably not all specifically distinct, widely distributed in the western part of South Africa, also recorded from the East London and Bathurst districts. (Type: *G. africana* Linn.)

2400 **11. ACROSANTHES** E. & Z., Enum., p. 328 (1837)

Flowers bisexual. *Calyx-tube* short, turbinate; lobes 5, somewhat fleshy, lanceolate, subacuminate, somewhat keeled on the back. *Petals* 0. *Hypogynous disc* 0. *Stamens* 10—40, irregularly inserted or in bundles on the calyx-tube; filaments linear; anthers short, somewhat didymous. *Ovary* superior, completely or incompletely 2-chambered, with a single ovule in each chamber, rarely ovules 2; styles 2, short, papillose. *Fruit* a capsule, imperfectly 2-locular, 2-seeded, loculicidally 2-valved. *Seed* subreniform or compressed and suborbicular, deeply pitted or rugose, sometimes with an aril.

Small glabrous undershrubs; leaves opposite, somewhat thick, lanceolate or linear, often subacuminate, connate at the base; stipules 0; flowers small, solitary, on long or short pedicels.

Endemic; species 4, found in the south-western districts of the Cape Province from Clanwilliam to Caledon. (Type: *A. anceps* (Thunb.) Sond.)

2401 **12. AIZOON** Linn., Sp. Pl., ed. 1, p. 488 (1753)

Flowers bisexual. *Calyx-tube* turbinate, hemispherical or subcampanulate, sometimes very short, often strigose; lobes 4—5, spreading, sometimes acuminate, valvate or imbricate, often coloured within, often covered with crystalline hairs. *Petals* 0. *Stamens* many, often about 20, inserted in the calyx-throat, grouped in bundles alternating with the calyx-lobes; filaments linear; anthers oblong, didymous. *Ovary* superior, sometimes discoid, included in the calyx-tube, 4—5-angled, 4—5-chambered, with 2 to many pendulous ovules in each chamber; styles 4—5, free, filiform or linear, papillose. *Fruit* a capsule, subcorky or subwoody, surrounded by the persistent calyx, 4—5-locular, dehiscing at the apex in a stellate manner, with 2 to many seeds in each loculus. *Seeds* small, pendulous on a long funicle, compressed, subreniform, sometimes granulated or ribbed; embryo cylindric, curved.

Herbs or undershrubs, sometimes with a very long tap-root, often strigose or papillose-pubescent or tomentose; leaves alternate, rarely opposite, sessile or petioled; stipules 0; flowers axillary, solitary or on divaricate branches arranged in a cymose manner.

Species about 20, natives of southern Europe, Africa, Arabia, and the Canary Islands; rare in Australia; 12 species recorded from South Africa widely distributed; not recorded from the Transvaal. (Type: *A. canariense* Linn.)

2403 **13. TETRAGONIA** Linn., Sp. Pl., ed. 1, p. 480 (1753)

(*Tribulocarpus* Sp. Moore; *Anisostigma* Schinz)

Flowers bisexual, sometimes with male flowers with numerous stamens on the youngest part of the inflorescence. *Calyx-tube* angled, winged, or horned; lobes 3—5, rarely 6—7. *Petals* 0. *Stamens* 1 or more, solitary or in fascicles; filaments linear or filiform; anthers oblong or linear. *Ovary* inferior, rarely $\frac{1}{2}$ inferior, 3—8- (rarely 1—2-) chambered, with a solitary pendulous ovule in each chamber; styles as many as the ovary chambers, subulate, short or subelongated, papillose. *Fruit* enclosed in the calyx-tube, nut-like or drupaceous, obovoid or angled, sometimes broadly winged or horned, indehiscent. *Seed* subreniform, with a membranous testa; embryo curved, subcylindric.

Herbs or undershrubs, prostrate or subscandent, glabrous, pilose or papillose; leaves alternate, oblong, linear, ovate, or deltoid, entire, sometimes thick; stipules 0; flowers axillary, solitary or few, sessile or on long pedicels, sometimes inflorescence subspicate.

Species between 50 and 60, natives of Africa, eastern Asia, Australia, and south temperate America; about 30 species in South Africa, not all described, recorded from South West Africa, the central districts of the Cape Province and extending through the south-western districts as far as East London; not recorded from Natal or the Transvaal. (Type: *T. fruticosa* Linn.)

2405 **AISTOCAULON** von Poelln., Succulent Plants, p. 123 (1935)

(*Acaulon* N. E. Br.)

Calyx subequally 5-lobed, pustulate. *Petals* numerous, free, all widely spreading and imbricating in 1 plane as if in 1 series. *Stamens* numerous,

all collected into a broad cone; the outer (staminodes) without anthers; filaments hairy at the basal part. *Ovary* more than $\frac{1}{2}$ -superior, very convex above, flattish-convex beneath, with 10—13 shallow chambers; placentas on the floor of the chambers; stigmas 10—13, subulate, laterally compressed and fringed on their inner edges. *Capsule* $\frac{1}{2}$ - or more than $\frac{1}{2}$ -superior, flattened, about equally convex above and beneath, 10—13-locular, with 10—13 valves, with the sutural ridges somewhat elevated and gaping; valves with a thin central keel from base to apex within; expanding-keels adnate only to the base of the valve, closely contiguous at their base, then diverging, with membranous marginal wings which, at the basal part, are broad and united in pairs and stand erect so as to form a thin wing-like membranous keel between the bases of the valves and, at the apical part, tapering into slender linear membranous tips nearly as long as the valve; loculi more than $\frac{1}{2}$ -superior, acutely roofed with membranous loculus-wings rising above the level of the base of the valves into a broad cone terminating in a series of points; placental tubercle absent. *Seed* globose-ovoid, pointed at one end, nearly smooth to the eye but microscopically tuberculate, brown.

A stemless succulent perennial, with a firm fleshy rootstock; leaves opposite, united at the base, spatulate, arranged in a somewhat 4-ranked rosette, very spreading, covered with raised dots or small pustules; flowers appearing to be axillary, solitary or 2—3 in a sessile bracteate cyme, pedicellate.

Species 1, recorded from the Willowmore district. (Type: *A. rosulatum* (Kensit) N. E. Br.)

NOTE.—See N. E. Brown's description of *Acaulon* in *Journal of Botany*, vol. 66, p. 76 (1928). H. Jacobsen has placed the genus under *Aristocaulon* van Poelln.—E. P. P.

2405 AMOEBOPHYLLUM N. E. Br., Gard. Chron., vol. 78, p. 433 (1925) (in Key only); in Phill. Gen. S. Afr. Fl. Pl., p. 244 (1926)

Calyx with a short tube above its union with the ovary, 5-lobed above. *Petals* numerous, narrowly linear, united at the base into a distinct tube, arising from the angle where the calyx unites with the ovary. *Stamens* numerous, in several series, arising from the corolla-tube; filaments short, apparently incurved. *Ovary* $\frac{1}{2}$ - or less than $\frac{1}{2}$ -superior, 5-chambered; placentas axile; stigmas 5, short, stout. *Capsule* $\frac{1}{2}$ - or apparently more than $\frac{1}{2}$ -superior, 5-locular, with 5 valves; valves appear to have 1 central expanding-keel and a broad wing on each side; wings uniting in pairs between the valves (only an immature specimen seen).

Dwarf perennial bushy succulents, with stout erect branches papillate on the green parts; leaves alternate, sessile, withering and persisting as spines or as a hardened fragment; flowers in terminal cymes, pedicellate.

Species 3, recorded from South West Africa. (Type: *A. angustum* N. E. Br.)

2405 ANTIMIMA N. E. Br., Gard. Chron., vol. 87, p. 211 (1930)

Calyx subequally 5-lobed down to its union with the ovary. *Petals* free, in about 2 series. *Stamens* numerous, erect, in a ring around the large stigmas; filaments not bearded. *Ovary* inferior, flat on the top, 5-chambered; placentas on the outer wall; stigmas 5, large, stoutly lanceolate-subulate, acuminate. *Capsule* not seen.

A very dwarf succulent perennial, glabrous, forming clumps of very short erect branches, with 1 pair or, when making new growth, 2 pairs of leaves to each; leaves united at the base, ascending-spreading, thick and fleshy, ovate-lanceolate, smooth, whitish-green; flowers solitary, terminal, sessile, bibracteate.

Species 1, recorded from the Van Rhynsdorp district. (Type: *A. dualis* (N. E. Br.) N. E. Br.)

- 2405** *APATESIA* N. E. Br., Gard. Chron., vol. 81, p. 81 (1927) (in Key only), and Gard. Chron., vol. 91, p. 262 (1932)

(*Thyracosperma* N. E. Br.; *Thyrasperma* N. E. Br.)

Calyx produced a little beyond its union with the ovary into a saucer-shaped limb, unequally 5-lobed above; ovary part shallowly hemispherical; lobes narrowly spatulate from a broad base; the inner with broad membranous margins. *Petals* numerous arising from the saucer-shaped limb of the calyx, in 4–5 series, free, widely spreading. *Stamens*, numerous from the saucer-shaped limb of the calyx, all inflexed, bent down on top of the ovary and then upcurved around the style and stigmas; inner filaments bearded at the base; staminodes numerous, arising from the saucer-shaped limb of the calyx, hair-like or petal-like at the base and hair-like above, contorted, at first more or less bent over the stamens, afterwards becoming more erect. *Ovary* inferior, shallow, flat on the top and sunk below the rim of the calyx, 10–12-chambered; placentas on the outer walls of the chambers; ovules many in each chamber. *Capsule* shallow, slightly convex beneath, circular in outline, 10–12-locular, with 10–12 valves; valves horizontally spreading when expanded, narrowly deltoid; expanding keels about $\frac{1}{2}$ as long as the valve and subcontiguous into a central keel, adnate to the valve throughout their length, without free tips or wings; loculi open, without loculus-wings; tubercle none. *Seed* globose, smooth, without a nipple.

Dwarf annuals, branching at the base; branches decumbent; leaves opposite, petiolate, flat or concave like a spoon, not united in pairs at the base, dotless; petiole dilated below into an open sheath; flowers solitary, terminal, on long pedicels.

Species 3, recorded from the Cape, Somerset West, and Piquetberg districts. (Type: *A. pillansii* N. E. Br.)

NOTE.—H. Jacobsen in *Verzeichnis der Arten der Gattung Mesembryanthemum*, pp. 13, 195 (1938), reduce *Thyracosperma* N. E. Br. and *Thyrasperma* N. E. Br. as synonyms of *Apatesia*, though Brown in Phillips's *Genera South African Flowering Plants* described the ovary as 1-chambered, but see N. E. Brown's note in *Gardener's Chronicle*, vol. 87, p. 71 (1930).—E. F. P.

- 2405** *APTENIA* N. E. Br., Gard. Chron., vol. 78, p. 412 (1925)

(*Litocarpus* L. Bolus)

Calyx unequally 4-lobed down with its union with the ovary. *Petals* numerous, united at the base into a short tube. *Stamens* many but not very numerous, erect, arising from the corolla-tube; filaments not bearded. *Ovary* inferior, 4-chambered; placentas axile; style none; stigmas 4, minute. *Capsule* 4-locular, with 4 valves; valves broader than long, with the apical part so abruptly thickened that the basal termination of the thickening is quite verticle; expanding keels closely contiguous, forming 1 central keel with its end united to the subvertical base of the thickened apical part of the valve, without marginal wings or flaps; loculi open, without loculus-wings or tubercles. *Seed* compressed, circular in outline, tuberculate.

Perennial succulent herbs, but of short duration; branches elongated, with distinct internodes, prostrate; leaves opposite, petiolate, flat; flowers solitary in the forkings of the branches, pedicellate.

Species 2, found in the eastern coastal districts of the Cape Province. (Type: *A. cordifolia* (L.) N. E. Br.)

- 2405** *ARGYRODERMA* N. E. Br., Gard. Chron., vol. 71, p. 92 (1922)

(*Derenbergia* Schwant. ex parte; *Roodia* N. E. Br.)

Calyx produced above its union with the ovary into a short or distinct tube, 6-lobed at the apex. *Petals* numerous, free, arising from the top of the calyx-tube. *Stamens* very numerous, arranged in a dense ring, arising from

the top of the calyx-tube. *Ovary* inferior, 10—24-chambered; placentas on the outer walls or on the floor of the ovary-chambers; stigmas small, sessile on top of the ovary, entire or faintly crenate. *Capsule* broad and shallow, 10—24-locular, with 10—24 valves; each valve with 2 brown expanding keels $\frac{1}{2}$ as long as itself and with membranous marginal wings and ending in membranous points; loculi roofed with rather rigid loculus-wings and the outer opening nearly closed by a tubercle.

Stemless succulent perennials, forming with age clumps with underground branches; each growth with 2 or, when a new pair is forming, 4—6 erect or spreading leaves which are united at the base; leaves subterete or flat on the face and convex on the back, firm and smooth, dotted or dotless; flower solitary, terminal, pedunculate; peduncle bracteate.

Species 49, recorded from Namaqualand and the Van Rhynsdorp district. (Type: *A. testiculare* N. E. Br.)

2405 ASPAZOMA N. E. Br., in *Phill. Gen. S. Afr. Fl. Pl.*, p. 244 (1926)

Calyx produced above its union with the ovary into a distinct tube, unequally 4—5-lobed above, with 2 lobes leaf-like and the others shorter and more membranous. *Petals* numerous, linear, in 2—3 series, apparently united into a short tube at the base. *Stamens* and staminodes numerous, erect, possibly connivent into a cone(?). *Ovary* conical at the top (probably $\frac{1}{2}$ -superior), 4—5-chambered; placentas axile. *Capsule* not seen.

A bushy branched succulent perennial; leaves more than two to a branch, some alternate and others opposite, semi-terete or subtrigonus, always with a tubular sheath which embraces the branches or the sheath above and nearly or quite as long as the internodes; flowers terminal, solitary.

Species 1, recorded from Namaqualand and the Van Rhynsdorp district. (Type: *A. amplectens* (L. Bolus) N. E. Br.)

2405 BIJLIA N. E. Br., in *Journ. Bot.*, vol. 66, p. 267 (1928)
(*Bolusanthemum* Schwant.)

Calyx subequally 5-lobed. *Petals* 2-seriate, free, cuneately linear. *Stamens* numerous, in an erect column, exposed to view to their base. *Ovary* inferior, 5-chambered; placentas on the outer walls of the chambers; stigmas 5, filiform. *Capsule* shortly and broadly obconic, flattish, with raised sutures on the top, 5-locular, with 5 valves; valves of expanded capsule inflexed and separating but slightly from one another, not spreading; expanding keels small, slightly prominent, about $\frac{1}{2}$ as long as the valve and without marginal wings; loculi acutely roofed with slightly stiff loculus-wings, with acute depressions between the ridges and the opening nearly closed by a large tubercle. *Seeds* several in each loculus, ovoid, pointed at one end.

A stemless or tufted succulent perennial; leaves opposite, obliquely and clavately trigonus, strongly keeled, whitish; peduncle not exerted from between the leaves; flowers 1—3, pedicellate; bracts present.

Species 1, recorded from the Prince Albert district. (Type: *B. cana* (Haw.) N. E. Br.)

2405 BROWNANTHUS Schwantes, in *Zeitschr. f. Sukkulent.*, vol. 3, pp. 14 (in clavi) et 20 (1927)
(*Trichocyclus* N. E. Br.)

Calyx 5-lobed down to its union with the ovary. *Petals* numerous, linear, united below into a distinct tube. *Stamens* numerous, erect. *Ovary* $\frac{1}{2}$ -superior, 5-chambered; placentas axile; stigmas 5, free or united into a very

short style at the base, filiform, finely pointed. *Capsule* 5-locular, with 5 valves; each valve either with a pair of free pocket-like appendages formed of 2 membranous wings folded together or with a central keel and a wing from each margin of the valve folded upon it; loculi without wings or tubercles. *Seed* small, slightly compressed, not flat or winged.

Dwarf bushy succulent perennials; leaves opposite, short, united at the base into a sheath around the stem and there bearing a ring of deflexed hairs or cilia encircling the stem; flowers terminal, sometimes becoming lateral, solitary or in small cymes.

Species 5, recorded from South West Africa, Namaqualand, and the Kenhardt, Calvinia, Van Rhynsdorp, Prince Albert, Laingsburg, Ceres, and Uniondale districts. (Type: *B. ciliatus* (Ait.) Schwantes)

NOTE.—See article by Mr. A. A. Bullock in *Kew Bulletin*, p. 492 (1937).—E. P. P.

2405 **CARPANTHEA** N. E. Br., Gard. Chron., vol. 78, p. 412 (1925)
(in Key only); in Phill. Gen. S. Afr. Fl. Pl., p. 245 (1926)

Calyx 5-lobed down to the top of the ovary. *Petals* very numerous, slender, free or nearly so. *Stamens* very numerous, at first inflexed to the centre over the stigmas, afterwards spreading outward and exposing the stigmas; outer stamens hair-like and without anthers. *Ovary* inferior, broader than deep, 12—20-chambered; placentas on the floor of the chambers; style none; stigmas 12—20, filiform, finely pointed. *Capsule* much broader than deep, 12—20-locular, with 12—20 valves; valves narrow, with a pair of closely contiguous expanding keels ending in awns, without marginal wings; loculi not roofed but with a very narrow space for the seeds to escape. *Seed* small, roundish, not winged.

An annual succulent herb; leaves opposite, flat, radical or at the lower part of the flowering branches; pedicels longer than the leaves, erect, prostrate in fruit.

Species 1, found on the Cape Peninsula. (Type: *C. pomeridiana* (L.) N. E. Br.)

2405 **CARPOBROTUS** N. E. Br., Gard. Chron., vol. 78, p. 433 (1925)
(in Key only); in Phill. Gen. S. Afr. Fl. Pl., p. 249 (1926)

Calyx 5-lobed down to its union with the ovary. *Petals* numerous, free. *Stamens* numerous, erect. *Ovary* inferior, 10—16-chambered; placentas on the outer walls of the chambers; style 0; stigmas 10—16, radiating, plumose. *Fruit* fleshy or pulpy, indehiscent and without valves, 10—16-locular. *Seed* obovoid, slightly compressed, on long funicles.

Perennial succulents, with trailing stems having distinct internodes; leaves opposite, slightly united at the base, sharply 3-angled; flowers large, terminal, solitary.

Species about 24, natives of Africa, Australia, Tasmania, and South America; about 20 species in South Africa, recorded from the coastal strip from the Cape to the Humansdorp district; also recorded from the Malmesbury and Darling districts. (Type: *C. edulis* (L.) L. Bol.)

2405 **CEPHALOPHYLLUM** Haw., Revis. Pl. Succulent., p. 108 (1821)
emend. N. E. Br. in Phill. Gen. S. Afr. Fl. Pl., p. 247 (1926)

Calyx 5-lobed down to its union with the ovary. *Petals* numerous, free, linear. *Stamens* numerous, erect, not collected into a column. *Ovary* inferior, 15—20-chambered, with the top raised into a crater-like rim encircling the base of the stigmas or perhaps sometimes merely depressed at the centre; placentas on the floor of the chambers; style 0; stigmas 15—20, plumose. *Fruit* not seen ripe.

Dwarf succulent perennials; main stem short or very short, producing decumbent or prostrate branches with distinct internodes between some of the leaf-pairs; leaves opposite, crowded into a tuft on the main stem and ends of the branches, elongated, subterete or 3-angled, with more or less convex sides, minutely dotted; flowers solitary, terminal, on long bractless pedicels.

Species about 70, recorded from South West Africa, Namaqualand, through the coastal area to the Riversdale district; also recorded from the Kenhardt and Matjesfontein districts. (Type: *C. tricolorum* (Haw.) N. E. Br.)

2405 CEROCHLAMYS N. E. Br., Journ. Bot., vol. 66, p. 171 (1928)

Calyx subequally 5-lobed down to its union with the ovary; some of the lobes with narrow membranous edges. *Petals* numerous, free, 2—3-seriate, linear. *Stamens* numerous, all apparently connivent in a cone; filaments not bearded; stamens filiform, surrounding the stamens. *Ovary* inferior, 5-chambered, obconic, flattish on the top; placentas on the outer walls of the chambers; stigmas 5, papilla-like, acute. *Capsule* very shortly obconic, flattish or slightly convex, with raised sutures on the top, 5-locular, with 5 valves; valves erect when expanded; expanding keels diverging from the base, with free awn-like and incurved tips; loculi acutely roofed with slightly stiff loculus-wings; placental tubercle absent, but with a dense mass of funicles at the opening in empty loculi. *Seed* ovoid, pointed at one end, microscopically tuberculate.

A stemless succulent perennial or, with age, becoming tufted and with short branching stems; leaves opposite, 1—3 pairs to a growth, shortly united at the base, trigonously clavate with the keel very oblique and so much turned to one side that one side is flat and makes nearly a right-angle with the flat surface or upper side of the leaf, while the other side is convex and much broader, rarely keel nearly central and the two sides convex, very firm in substance, covered with a waxy secretion, dotless.

Species 1, recorded from the Swellendam district. (Type: *C. trigona* N. E. Br.)

2405 CHERIDOPSIS N. E. Br., Gard. Chron., vol. 79, p. 406 (1926)

Calyx 4—5-lobed down to its union with the ovary. *Petals* numerous, free. *Stamens* numerous, erect or more or less connivent. *Ovary* partly superior, becoming inferior in fruit, 8—19-chambered; placentas on the outer wall or floor of the chambers; stigmas 8—19, sessile, more or less plumose. *Capsule* 8—19-loculi, with 8—19 valves; valves narrow, widely spreading or reflexed when wetted; expanding keels diverging upwards from the base or contiguous at the basal part and then diverging, with membranous awn-like or linear points, usually without marginal wings, but sometimes with narrow marginal wings at the basal half; loculi roofed with loculus-wings and the opening nearly closed by a large tubercle.

Dwarf succulent perennials forming clumps; leaves opposite, in nature only 1—2 pairs to a growth but, under cultivation, up to 3 pairs are sometimes present at the same time, the alternating pairs often dissimilar in size, form, or degree of union at the base, one pair being only shortly united at the base, and the next pair united from one-third to three-fourths or, in a few species, for nearly all their length, withering, and the basal part forming during the resting period a truncate sheath surrounding the next pair of leaves or, in a few species, completely enclosing the new pair which usually have their flat faces closely applied to one another so that the pair somewhat resembles the beak of a bird, green, glaucous-green or white, often conspicuously dotted, sometimes without dots. *Flower* solitary, terminal, usually with only pair of leaves at the base of the pedicel, but sometimes also bearing another pair at or below its middle.

Species 101, found in the Karoo area from Namaqualand to the Laingsburg district. (Type: *C. tuberculata* (Mill.) N. E. Br.)

2405 CIRCANDRA N. E. Br., Gard. Chron., vol. 87, p. 126 (1930)

Calyx unequally 5-lobed down to the top of the ovary. *Petals* numerous, free, cuneately linear. *Stamens* numerous, very short, arranged in a ring around the top of the ovary, fully exposed to view. *Ovary* inferior, concave and with 5 slight sutural ridges on the top; stigmas 5, very small, radiating. *Capsule* unknown.

A perennial succulent shrub; leaves opposite, scarcely united at the base; flowers solitary, terminal, pedicellate.

Species 1, locality unknown. (Type: *C. serrata* (L.) N. E. Br.)

2405 CONICOSIA N. E. Br., Gard. Chron., vol. 78, p. 433 (1925)

Calyx subequally or unequally 5-lobed down to its union with the ovary; lobes with broad bases (the 3 inner with membranous margins), subulate or terete at the tips. *Petals* very numerous, free, in several series, linear, often ciliate at the basal part. *Stamens* numerous, at first incurved around or over the stigmas, afterwards spreading and exposing the stigmas; filaments bearded at the base; staminodes numerous, filiform or hair-like, at first more or less incurved. *Ovary* inferior or partly superior, with a flattish top rising at the centre into a short cone, 10—20-chambered; placentas on the outer walls of the chambers; ovules several in each chamber; stigmas 10—20, filiform, sessile. *Capsule* dry, $\frac{1}{2}$ -superior, with the conical top separating into 10—20 narrow valves or segments which stand more or less erect, not spreading when wetted, without expanding keels; each valve with a pair of thin submembranous wing-like loculus-partitions on the inner face. *Seed* rather large for the group, subglobose, or somewhat lenticular, often slightly keeled at the margin, not winged, smooth.

Perennials or, in 1 or 2 species, only lasting one or two years, either with fibrous roots and a single main stem terminating in a perennial dense tuft of leaves, with flowering branches produced from the basal part of the tuft, or with a long fleshy or tuberous rootstock emitting from its top a central leaf-tuft and prostrate flowering branches or flowering branches only, with opposite or sometimes some alternate leaves scattered along them and a small tuft at the ends, deciduous after fruiting; leaves in the large tufts crowded and appearing alternate but in reality opposite in their origin, slightly stem-clasping at the base, erect or ascending except when old, long and narrow, either sharply 3-angled or subterete, slightly channelled down the face; flowers large, solitary, on long pedicels.

Species 13, recorded from Namaqualand, the Van Rhynsdorp, Malmesbury, Cape, George, and Riversdale districts. (Type: *C. pugioniformis* (L.) N. E. Br.)

2405 CONOPHYTUM N. E. Br., Gard. Chron., vol. 71, p. 198 (1922)

(*Derenbergia* Schwant. partly)

Calyx with a distinct slender membranous tube above the ovary, 4—6-lobed at the top more or less included in or partly or entirely exserted from the body of the growth. *Corolla* with a distinct slender tube as long as or longer than the calyx-tube. *Petals* numerous or occasionally few, spreading or recurved, in 1 to several series; the inner series at the mouth of the tube sometimes much smaller than the others and differently coloured. *Stamens* few or many, erect, not collected into a column, included in the corolla-tube or partly exserted from it. *Ovary* flat or convex at the top, with a marginal crenulate glandular ring, 4—6-chambered; style long or short (rarely almost absent); stigmas 4—6, filiform. *Capsule* small, 4—6-valved, 4—6-locular, with or without loculus-wings covering the seeds.

Very small succulent plants, stemless or developing stems with age, with several or numerous growths in a clump; roots very short; each growth formed of two

leaves fused into one fleshy body, globose, obconical, ovoid, subcylindric, or oblong in shape, convex, flat, depressed, notched or two-lobed at the top, with a small orifice resembling a closed mouth at the centre of the top or between the lobes; flowers solitary, growing up from the interior of the growth through the central orifice.

Described species 268, recorded from South West Africa, Namaqualand, and the Van Rhynsdorp, Clanwilliam, Worcester, Malmesbury, Robertson, Ladismith, Beaufort West, Prince Albert, Uniondale, Laingsburg districts. (Type: *C. minutum* (Haw.) N. E. Br.)

NOTE.—Several species of *Conophytum* are placed by H. Jacobsen (*Verzeichnis der Arten der Gattung Mesembryanthemum* L. (1928)) in the genus *Ophthalmophyllum* Dtr. and Schwant.—E. P. P.

2405 CRYOPHYTUM N. E. Br., Gard. Chron., vol. 78, p. 412 (1925)

Calyx produced above its union with the ovary into a short distinct tube, 4—5-lobed above or lobed nearly or quite down to its union with the ovary; 2 of the lobes often large and leafy. *Petals* numerous, slender, linear or linear-filiform, united at the base into a short distinct tube and arising round the top of the ovary. *Stamens* numerous, erect, arising from the corolla-tube; filaments several times as long as the anthers. *Ovary* partly or more than $\frac{1}{2}$ -superior, usually 5- (rarely 4-) chambered; placentas axile; stigmas usually 5, rarely 4, erect, filiform. *Capsule* 5- (rarely 4-) ocular, with 5, rarely 4 valves; valves with the expanding keels contiguous, forming a central and often acute keel, with a broad inflexed or erect submembranous flap or wing on each side; loculi open, without loculus-wings or tubercles. *Seeds* numerous in each loculus, small, compressed, sometimes D-shaped, very minutely tuberculate or smooth.

Annual or biennial herbs (one species perhaps perennial), covered with watery and often glittering papulae; stems and branches with distinct internodes, often prostrate; leaves alternating on the flowering branches and opposite at the base, or all opposite, sessile or petioled, flat or subterete; flowers solitary and opposite the leaves, scattered along the branches or axillary or in cymes.

Species 54, natives of Africa, the Mediterranean region, Arabia, Persia, Baluchistan, Kurdistan, and the Atlantic Islands; 53 species in South Africa, many without precise locality; recorded from South West Africa, Namaqualand, Van Rhynsdorp, and through the coastal area to the Uitenhage and Albany districts; also recorded from the Cradock, Graaff-Reinet, Prince Albert and Oudtshoorn districts. (Type: *C. crystallinum* (L.) N. E. Br.)

2405 DACTYLOPSIS N. E. Br., Gard. Chron., vol. 83, p. 338 (1928)

Calyx produced above its union with the ovary into a short tube, equally 5-lobed above. *Petals* numerous, in several series; the inner (staminodes?) concealing the stamens, linear, stiff, united into a tube at the base and arising in the angle where the calyx unites with the ovary. *Stamens* numerous, erect, in 4 series, arising from the tube of the corolla and not exerted from it. *Ovary* $\frac{1}{2}$ -superior, 5-chambered; placentas axile; ovules numerous in each chamber. *Capsule* $\frac{1}{2}$ -superior, subglobose, 5-locular, with the 5 sutures raised into grooved ridges on the top; valves deltoid, with the expanding keels contiguous at the lower part and these forming the loculus-partitions more or less diverging at the apical part and there bearing broad membranous marginal wings or flaps that are united in pairs between each pair of valves; loculi open, without loculus-wings or tubercles; central axis ending in 5 short hard rays arranged in a small star. *Seeds* very small, many in each loculus, compressed, ellipsoid, somewhat pointed at each end, smooth.

A dwarf succulent perennial, forming clumps, very pulpy; leaves 2 or 3 to each growth, alternate, terete, very stout, with large tubular sheaths clasping one

another closely and concealing the short stem, soft and pulpy, dotless, withering completely and disappearing when at rest; flowers terminal, solitary, sessile.

Species 1, recorded from the Van Rhynsdorp district. (Type: *D. digitata* (Ait.) N. E. Br.)

2405 DEILANTHE N. E. Br., Gard. Chron., vol. 89, p. 259 (1931)

Calyx subequally 5-lobed down to its union with the ovary. *Corolla* expanding in the evening; petals numerous, free, in 3—4 series. *Stamens* numerous, erect, in a loose cylindric mass. *Glands* connected into a crenulate ring. *Ovary* inferior, flattish or slightly convex on the top, 10—13-chambered; placentas on the floor or outer walls of the chambers; stigmas 10—13, erect, subulate. *Capsule* inferior, shortly obconic, flattish at the top, with raised sutures, 10—13-locular, with 10—13 valves; valves narrowly deltoid, with a very prominent acute keel on the inner face; expanding keels diverging from the base, about $\frac{1}{2}$ as long as the valve, each tipped with a pallid awn reaching nearly to the tips of the valves, with short broad membranous marginal wings at the basal part that are united in pairs between the valves; loculi acutely roofed with rather stiff loculus-wings; placental tubercle none.

A stemless or nearly stemless perennial; rootstock thick and firmly fleshy, deeply rooting, sometimes with short branches at the top, without internodes; leaves opposite, united at the base, arranged in rosettes, spatulate-ovate or spatulate-lanceolate, dotless, velvety-puberulous; flowers solitary, pedicellate, bracteate at the base of the pedicel.

Species 1, recorded from the Laingsburg, Prince Albert, and Willowmore districts. (Type: *D. peersii* (L. Bol.) N. E. Br.)

2405 DICROCAULON N. E. Br., Journ. Bot., vol. 66, p. 141 (1928)

Calyx unequally 4—5-lobed. *Petals* very numerous, free, filiform, with the inner merging into staminodes. *Stamens* erect. *Ovary* inferior, 4—7-chambered; placentas on the walls of the chambers; stigmas 4—7, minute, subulate, acute. *Capsule* inferior, 4—7-locular, with 4—7 valves; valves prominently keeled, contiguous or parallel, with broad membranous margins; loculus-wings membranous; placental tubercle absent.

Low shrubs; leaves opposite, amplexicaul at the base, papulose; flowers terminal, solitary.

Species 2, recorded from Namaqualand and the Van Rhynsdorp district. (Type: *D. pearsoni* N. E. Br.)

2405 DINTERANTHUS Schwantes, Zeitschr. f. Sukkulent., p. 184 (1926)

Calyx subequally 6—8-lobed; some of the lobes having membranous edges. *Petals* numerous, free, spreading horizontally. *Stamens* numerous, erect, exposed to view from their base; filaments bearded at the base. *Ovary* inferior, flattish on the top, 6—9-chambered; placentas on the outer walls of the chambers; stigmas 6—9, subulate, diverging. *Capsule* shortly and broadly obconic, flattish with slightly raised sutures on the top, 6—9-locular, with 6—9 valves; valves widely spreading or recurved when expanded; expanding keels closely contiguous into a central keel, with broad membranous margins; loculi open, without loculus-wings and without a placental tubercle. *Seeds* very numerous in each loculus, very minute.

Stemless perennials; each growth with one pair (or when making new growths 2 pairs) of very thick fleshy leaves which are united at the base for one-third to two-thirds of their length and are convex on the face causing them to be united higher up at the middle part than at the edges, distinctly dotted and with a very

minutely granulated surface; flower solitary, terminal, appearing sessile, pedicelled; pedicel flat, acutely 2-edged, entirely concealed between the united part of the leaves, visible in the fruit.

Species 5, recorded from South West Africa and the Prieska district. (Type: *D. microspermus* (Dint. & Derenb.) Schwantes)

2405 DIPLOSOMA Schwantes, Zeitschr. f. Sukkulent, vol. 2, p. 179 (1926)

Calyx unequally 6—7-lobed. *Petals* numerous, in 2 series. *Stamens* numerous, erect, surrounded by staminodes. *Ovary* inferior, flat at the top; stigmas 7, erect, filiform.

Small succulent perennials, stemless and deciduous, without evident root-stock but with numerous short fibrous roots from a dense cluster of sessile growths; each growth formed of two opposite leaves which are both horizontally directed and shortly and very obliquely united at the base and along the basal part of one margin, with the free parts diverging, soft, pulpy, withering completely away annually; flowers solitary, terminal, sessile between the bases of the leaves; bracts none.

Species 2, recorded from the Piquetberg district. (Type: *D. retroversum* (Kensit) Schwantes)

2405 ECTOTROPIS N. E. Br., Gard. Chron., vol. 81, p. 12 (in Key only)

Sepals 5, unequal, linear-lanceolate, acute, convex on the back. *Petals* in 2—3 series, linear, obtuse. *Stamens* few (about 25), erect, in 1 series; filaments not bearded; staminodes few. *Ovary* partly superior 5-chambered; placentas at the base of the outer walls of the chambers; stigmas 5, linear. *Capsule* small and thin, separating into 5 valves or parts with the locular-partitions adhering to the centre of each part and separating from the central axis so that the ellipsoid smooth seeds are liberated.

A small dwarf perennial, very minutely papillate; leaves ascending, flat above, convex beneath, acute; flower solitary or 2-nate, sessile or pedicelled; bracts present.

Species 1, recorded from the Fort Beaufort and Kingwilliamstown districts. (Type: *E. alpina* N. E. Br.)

NOTE.—See also description by Dr. L. Bolus in *Annals of the Bolus Herbarium*, p. 98 (1925-28).—E. P. P.

2405 ENARGANTHE N. E. Br., Gard. Chron., vol. 87, p. 151 (1930)

Calyx unequally 4-lobed to its union with the ovary. *Petals* numerous, in about 2 series, free. *Outer stamens* erect in a ring; the inner crowded; filaments bearded below; staminodes 0. *Glands* in a crenulate ring. *Ovary* inferior, convex at the top, 8-chambered; placentas on the outer wall of the chambers; stigmas 8, short, subulate. *Capsule* unknown.

A dwarf shrubby succulent perennial, with woody branches and distinct internodes; leaves opposite, not united at the base, stoutly trigonous, not papulose; flowers solitary, terminal, subsessile or shortly pedicellate, large and showy.

Species 1, recorded from Namaqualand. (Type: *E. octonaria* (L. Bol.) N. E. Br.)

2405 EREPSIA N. E. Br., Gard. Chron., vol. 78, p. 433 (1925) (in Key only); in *Phill. Gen. S. Afr. Fl. Pl.*, p. 428 (1926)

Calyx produced above its union with the ovary into a short tube more or less thickened within at the apex, 5-lobed above. *Petals* free, arising from the top of the calyx-tube, linear. *Stamens* many, arising from the inner surface or at the top of the calyx-tube, all inflexed (not erect); staminodes numerous, some inflexed and more or less concealing the stamens and

arising with the petals. *Ovary* inferior, flat or slightly convex at the top, 5—6-chambered; placentas on the outer walls of the chambers; style none; stigmas 5—6, very small, stout, obtuse. *Capsule* sharply 2-edged, 5-locular, with 5 valves; each valve with a pair of distant expanding keels ending in broad awn-pointed membranes; loculi roofed with stiff wings but without tubercles at the openings.

Perennial succulent shrublets; branches with distinct internodes, 2-edged; leaves opposite, very slightly or scarcely united at the base, laterally compressed and acutely 3-angled, dilated and scabrid or serrulate at the upper part of the keel; flowers solitary, at first terminal, becoming lateral, not bracteate.

Species about 38, extending from the Clanwilliam district, through the coastal area to the Uitenhage district; also recorded from the Ladismith district. (Type: *E. inculdens* (Haw.) Schwant.)

2405 FENESTRARIA N. E. Br., Gard. Chron., vol. 78, p. 433 (1925) (in Key only); in Phill. Gen. S. Afr. Fl. Pl., p. 246 (1926)

Calyx 5-lobed down to its junction with the ovary. *Petals* many, in 1 series, free, linear. *Stamens* numerous, erect, lax; staminodes 0. *Ovary* nearly superior, 10—11-chambered; placentas on the floor and outer walls of the chambers; style 0; stigmas 10—11, radiately spreading, very plumose. *Fruit* unknown.

Very dwarf stemless succulent perennials; leaves clustered, erect, club-shaped, truncate at the apex and there destitute of chlorophyll; flowers solitary, terminal, pedunculate, bracteate.

Species 2, recorded from South West Africa and Namaqualand. (Type: *F. aurantiaca* N. E. Br.)

2405 FRITHIA N. E. Br., Gard. Chron., vol., 78, p. 433 (1925) (in Key only); in Phill. Gen. S. Afr. Fl. Pl., p. 247 (1926)

Calyx with a short green tube above its junction with the ovary, 5-lobed above. *Petals* numerous, in several series, linear; the innermost smaller (staminodes?), all united at the base into a distinct tube. *Stamens* in about 3 series, erect, arising from the corolla-tube and apparently concealed by the inner petals (or staminodes?). *Ovary* inferior, 5-chambered; placentas on the outer wall of the chambers; style 0; stigmas 5, minute, stout, acute. *Fruit* unknown.

A very small stemless perennial herb; leaves 5—7 to a plant or growth, in a radical tuft, succulent, erect, clavate, subterete, truncate and without chlorophyll at the apex; flowers sessile or subsessile among the leaves, solitary.

Species 1, recorded from the Magaliesburg near Pretoria. (Type: *F. pulchra* N. E. Br.)

2405 GIBBAEUM Haw., Revis. Plant. Succul., p. 104 (1821)
(*Argeta* N. E. Br.; *Imitaria* N. E. Br.; *Mentocalyx* N. E. Br.)

Calyx unequally 6-lobed down to the base of the ovary, with 2 of the lobes larger than the others, when in bud with the base of 1 of the 2 larger lobes more projecting than that of the other lobe so as to form a sort of chin to the bud; lobes sometimes acutely keeled with the keel continued down the pedicel. *Corolla* large or rather small; petals numerous, free. *Stamens* numerous, erect, somewhat loose; filaments not bearded. *Glands* 6, large, separate. *Ovary* wholly superior and 6-ribbed when in flower, becoming $\frac{1}{2}$ -inferior in fruit, 6-chambered; placentas on the floor of the chambers; ovules numerous in each chamber; stigmas 6, stoutly subulate, somewhat bristly plumose, acute. *Capsule* $\frac{1}{2}$ -superior, obconic, with 6 gaping sutural

ridges on the top, 6-locular, with 6 valves; valves deltoid, reflexed spreading when expanded; expanding keels with their basal part rising in a hump $\frac{1}{2}$ as long as the valve, thin, parallel, minutely toothed at the edges and their upper part adnate to the valve and then forming broad marginal wings; loculi flatly roofed with membranous flexible loculus-wings, without a tubercle at the opening. *Seeds* many in a loculus, ovoid, pointed at one end, smooth.

Dwarf tufted perennials, rootstock fleshy, bearing one or more growths, each growth under natural condition with only one pair of leaves, except when making a new pair; leaves opposite, unequal, when young erect and pressed together so as to resemble an eagle's beak; adult leaves spreading, large and thick, flat on the face, one of them compressed and deeply keeled at the apical part on the back, velvety-puberulous; flowers solitary, terminal, pedicellate; bracts none.

Species 30, recorded from the Riversdale, Swellendam, and Ladismith districts. (Type: *G. pubescens* (Haw.) N. E. Br.)

2405 **GLOTTIPHYLLUM** Haw., Revis. Plant. Succul., p. 103 (1821)

Calyx 4-lobed down to its union with the ovary, often angular. *Petals* numerous, free or slightly united at the base, cuneately linear. *Stamens* numerous, erect; staminodes 0. *Ovary* partly superior, convex or flattish on the top, 7—11-chambered; placentas down the centre of the outer walls of the chambers. *Capsule* convex or flattish-convex on the top, 7—11-locular, with 7—11 valves; each valve with a pair of expanding keels $\frac{1}{2}$ as long as itself, ending in fine awn-like points, without marginal wings; loculi roofed with rigid loculus-wings and their opening nearly closed by a large tubercle. *Seed* small, ovoid, with a small nipple at one end.

Very dwarf succulent perennials, branching close to the ground; leaves 4 or more to a branch or division of the plant, opposite, crowded or very closely placed, usually 3 to several times as long as broad, but in a few species occasionally not much longer than broad under natural conditions, those of each pair subequal or unequal in size and usually with the terminal part of one leaf different in shape from that of the leaf opposite it, either arranged in 2 rows or the alternating pairs crossing one another, thick, soft and pulpy in substance, green, rarely whitish green or brownish tinted, without dots or, in some species, pellucid-dotted.

Species about 50, recorded from the Swellendam, Uniondale, Uitenhage, Port Elizabeth, Victoria East, Oudtshoorn, Ladismith, Prince Albert, and Jansenville districts. (Type: *G. linguiforme* (L.) N. E. Br.)

2405 **HYDRODEA** N. E. Br., Gard. Chron., vol. 78, p. 412 (1925)

Calyx produced above its union with the ovary into a short tube subequally or unequally 5-lobed above. *Corolla* small, not exceeding the calyx-lobes, arising from around the top of the ovary; petals united at the basal part into a tube. *Stamens* numerous, arising from the corolla-tube, erect; filaments not bearded. *Ovary* $\frac{1}{2}$ -superior, 5-chambered; placentas axile. *Capsule* $\frac{1}{2}$ - or more than $\frac{1}{2}$ -superior, really 5-valved but, as each valve separates into 2 segments, it falsely appears to be 10-valved; valves separating and standing erect, because the expanding keel instead of being hydroscopic so as to cause the valves to spread out flat are converted into stiff thin plates of parchment-like texture that are contiguous at the lower part but separate above and have inflexed acute points, with membranous marginal wings infolded and united in pairs between the valves and connecting them together. *Seeds* very small, ovoid, smooth.

Annuals, extremely succulent and watery, minutely papulose; stem and branches prostrate, very stout; leaves opposite at the base, alternate or occasionally opposite on the stems, sessile, stout, cylindric or oblong, obtuse; flowers sessile, alternate.

Species 3, natives of South Africa and the Island of St. Helena; 1 species recorded from South West Africa. (Type: *H. cryptantha* (Hook. fil.) N. E. Br.)

2405 HYMENOGYNE Haw., Revis. Plant. Succul., p. 192 (1821)

Calyx 5-lobed nearly or quite down to the top of the ovary. *Petals* numerous, free or nearly so. *Stamens* numerous. *Style* funnel-shaped, with 9—12 papilla-like stigmas on the surface of its rim. *Fruit* apparently 1-locular; apparent seeds (really 1-seeded carpels) large, flat and broadly winged all round, arranged in a single whorl around the central axis.

Annual herbs; leaves opposite, radical or clustered at the ends of the prostrate or decumbent branches, flat, petiolate, with the petiole dilated into a sheath at the base, not connate; flowers solitary; pedicels long, erect, becoming prostrate in fruit.

Species 2, ranging from the Clanwilliam to the Cape district. (Type: *H. glabra* (Ait.) Haw.)

NOTE.—N. E. Brown in *Gardener's Chronicle*, vol. 87, p. 71 (1930), makes the following observation: "I have found that the ovary appears to be composed of a solid mass of cellular tissue with many small cells immersed in it and arranged in pairs in a circle, each filled with 1 ovule. This tissue, which looks so solid and uniform, is really composed of many carpels fused together into a mass and, in the process of ripening, the carpels separate from one another and the tissue composing them dries up and forms a broad reticuled wing around each seed. So that when ripe, the separate carpels, each tightly enclosing one seed have all the appearance of a whorl of winged seeds around a central axis."—E. P. P.

2405 KHADIA N. E. Br., Gard. Chron., vol. 89, p. 279 (1931)

Calyx 5-lobed; inner-lobes with membranous margins. *Petals* numerous, free. *Stamens* numerous; the outer spreading and often with white barren anthers; staminodes numerous, in 3—4 rows filiform, recurving. *Ovary* inferior, 6—10-chambered; placentas on the outer walls of the chambers; stigmas 6—10, subulate or filiform, acute. *Capsule* shortly and broadly obconic, convex, with 6—10 raised and gaping sutural ridges on the top; valves with (always?) a central acute keel; expanding keels about $\frac{1}{2}$ as long as the valves, diverging from the base, without wings or awns; loculi somewhat acutely roofed with stiffish loculus-wings; placental tubercle present or absent. *Seeds* slightly compressed-pear-shaped, minutely or microscopically tuberculate.

Very dwarf succulent perennials, tufted, with numerous very short branches arising from a fleshy rootstock; leaves opposite, united at the base, crowded, semi-terete below, trigonous at the tips, smooth, pellucid-dotted; flowers solitary, pedicellate.

Species 6, only recorded from the Transvaal. (Type: *K. acutipetala* (N. E. Br.) N. E. Br.)

2405 LAPIDARIA Schwantes, in Möllers Deutsche Gärtner-Zeitung, p. 223 (1927)

Calyx somewhat compressed and 2-edged, subequally 7-lobed nearly down to its union with the ovary; lobes ovate, all but the 2 outer with membranous edges, dotted. *Petals* numerous, "loosely united at the base" (ex Dinter), ascending-spreading, so as to form a cup. *Stamens* numerous, erect, the inner much shorter and more inflexed than the outer, partly concealed in the cup of the corolla; filaments bearded at the base. *Ovary* inferior, flattish at the top, 6—7-chambered; placentas on the outer walls of the chambers; stigmas 6—7, subulate or filiform, ascending, with recurved tips, as long as or exceeding the stamens. *Capsule* shortly and broadly obconic, flat, with raised sutures at the top, 6—7-locular, with 6—7 valves; valves widely spreading or recurved when expanded; expanding keels contiguous below, diverging at the apical part, with broad membranous margins; loculi roofed with membranous loculus-wings, without a tubercle at the opening.

A stemless perennial; each adult growth with 3 or 4 pairs of crowded leaves always present at the same time and which are shortly united at the base; leaves flat or slightly concave on the face, not dotted, with a minutely granulated surface; flower solitary, terminal, pedicellate, but with the pedicel concealed in the bases of the leaves.

Species 1, recorded from Namaqualand. (Type: *L. margaretæ* (N. E. Br.) Schwantes)

2405 LEIPOLDTIA L. Bol., Flow. Pl. S. Afr., pl. 256 (1927)

Sepals 5, very rarely 6, subequal, with membranous margins. *Petals* in 1—2 series, linear-spathulate, obtuse, rose-pink. *Stamens* often crowded, erect; filaments of inner stamens bearded; staminodes 0. *Ovary* inferior, slightly convex above, usually 10- (very rarely 12-) chambered; placentas on the walls of the chambers; stigmas usually 10, very rarely 12, often crowded, narrowly subulate, acuminate. *Capsule* 10—12-locular, with usually 10, very rarely 12, valves; keels contiguous below, diverging upwards as the valves spread out flat; wings attached to the apex of the keel, free for the rest of their length, reaching the apex of the valve, broadly semi-ovate; loculus-wings contiguous, extending a little beyond the middle of the loculus; placental tubercle obovate.

Rather robust compact shrublets; branches ascending, with the flowering branches almost erect; leaves ascending, connate but easily separable, trigonous, turgid, dilated at the base; flowers very often 3-nate; peduncle terete, constricted under the calyx as if jointed, bracteate a little below the middle, persisting after flowering, hardened or sometimes spinescent.

Species 16, probably from the Calvinia or Clanwilliam district. (Type: *L. amplexicaulis* (L. Bol.) L. Bol.)

2405 LITHOPS N. E. Br., Gard. Chron., vol. 71, p. 44 (1922)

Calyx usually 4—7-lobed, slightly exserted above the leaves, no tube above the ovary, not membranous. *Petals* many, in 1—4 rows, linear, obtuse, rounded or with a notch at the apex. *Stamens* many, erect in a column; filaments sometimes papillate on the lower part. *Ovary* inferior, 4—7-chambered; style short or almost absent; stigmas 4—7, filiform; ovules many, with parietal placentation or arising from the floor of the ovary-chambers. *Capsule* 4—7-locular, with 4—7 valves; valves with 1 stout central expanding keel, split at the apex; wings membranous. *Seed* minute, with a nipple at one end, round or rotund, smooth or rugulose, coloured dark-brown or partly dark-brown, opaque or one part transparent.

Body of plant single or forming clumps of 2—20, embedded in the soil, turbin-ate; top surface plain, convex, oblique-convex or obconical, with large transparent areas often reduced to minute lines or dots, sometimes only transparent miniature windows raised or embedded in the body; window sometimes with few or many islands or covered with an opaque covering perforated by circular openings, very often bordered by a narrow buff band, with or without a laciniated or denticulated margin; margin sometimes absent or inner margin straight or with a triangular clear part at junctions of two margins; flower solitary, arising between the pair of leaves in the fissure.

Described species 50, found in South West Africa, the central districts, and in the neighbourhood of Pretoria. (Type: *L. turbiniformis* (Haw.) N. E. Br.)

2405 MESEMBRYANTHEMUM Linn., Sp. Pl., ed. 1, p. 480 (1753)

Calyx 4—6-lobed down to its union with the ovary. *Petals* numerous, free. *Stamens* numerous, erect. *Ovary* inferior, with 5 (or occasionally 4, 6, or rarely 7) chambers; style 0; stigmas 5 (or occasionally 4, 6, or rarely 7), stout, with an acute point, or subulate, rarely plumose; ovules on the

outer walls of the ovary-chambers. *Capsule* dry, with 5 (or occasionally 4, 6 or rarely 7) valves and loculi; valves with a pair of expanding keels on the inner face and, when wetted, spreading out flat or recurving; expanding keels with membranous wings on their outer margin or with membranous tips; loculi roofed with membranous wings but without tubercles at the openings. *Seed* small, ovoid or compressed ovoid, not flattened or winged.

Succulent perennials, rarely annuals, varying in habit, but usually having distinct internodes; leaves opposite, sessile, sometimes slightly united at the base, never flat, those of each pair equal in size.

Species 205, mostly natives of South Africa and widely distributed, but chiefly found in the central districts. (Type: *M. umbellatum* L.)

2405 MESTOKLEMA N. E. Br., Gard. Chron., vol. 100, p. 164 (1936)

Calyx subequally 5-lobed, with some of the lobes narrow and with membranous margins. *Petals* in 1 series, linear, often a little longer than the calyx-lobes. *Stamens* numerous, collected into a cone; the inner bearded; staminodes 0. *Ovary* $\frac{1}{2}$ -superior, conical or convex and ridged on the top; stigmas 5, erect, shorter than the stamens. *Capsule* small, $\frac{1}{2}$ -superior, 5-locular, with 5 valves; valves recurved when expanded; expanding keels contiguous below, diverging above, usually dull orange or orange brown, with rather narrow membranous acutely pointed wings; loculi roofed with membranous loculus-wings; placental tubercle 0. *Seed* ovoid, smooth, brown.

Shrubs or shrublets, in one species with a tree-like trunk, bushily and often intricately branched, sometimes (always ?) with a tuberous rootstock; young branches minutely papulose, slightly rough to the touch when dried and pallid, with the flower cymes persisting and hardening and becoming subspinose, but are not pungent; leaves opposite, not united at the base, often leaving a tooth-like projection on the stem when they fall away, trigonous or subterete, minutely or microscopically papulose and glittering, bearing leaf-tufts in their axils; flowers small, pedicellate, in terminal bracteate cymes that are 2 to 5 times dichotomously divided; bracts small, leaf-like.

Species 5, recorded from South West Africa and the Prieska, Hay, Fauresmith, Middelburg, Cradock, Somerset East, Albany, and Uitenhage districts. (Type: *M. tuberosum* (L.) N. E. Br.)

2405 MITROPHYLLUM Schwantes, in Zeitschrift f. Sukkulent., p. 181 (1926)

Calyx subequally 5-lobed to its union with the ovary. *Petals* numerous, free, in 3—4 series, linear. *Stamens* numerous, erect, in a column. *Ovary* inferior, with 5—7 sutural ridges on the flat top, 5—7-chambered; placentas on the outer wall; stigmas 5—7, subulate. *Capsule* very shortly and broadly obconic, with 5—7 prominent ridges on the flat top, 5—7-locular, with 5—7 valves; expanding keels usually diverging from the base, with incurved tips, sometimes subparallel, broad and flat, with the inner edge raised, with membranous margins; loculi shallow with or without membranous loculus-wings. *Seed* ovoid or pear-shaped.

Shrublets or rarely stemless perennials; stems all with distinct internodes or with internodes only developed on the flowering stems, the vegetative shoots then being without developed internodes; in two species apparently entirely stemless; leaves opposite, two pairs only produced at each growth annually and each pair different; the first pair free except at the very base, flat above, rounded or keeled on the back; the second pair united from a third part to nearly all of their length into a conical or rarely cylindric body, minutely crystalline-papulose especially at the tips; flowers solitary or developing into lax cymes when in fruit, terminal, pedicellate, with or without bracts.

Species 8, recorded from Namaqualand and the Clanwilliam district.

2405 **MONILARIA** Schwantes, in Gartenwelt, p. 69 (1929)

Calyx papulose or papillate, unequally 5-lobed down to its union with the ovary, with the ovary part shallow and convex beneath. *Petals* numerous, free, in 3—4 series, linear. *Stamens* numerous, erect in a column or later becoming more or less loose; filaments not bearded at the base. *Ovary* inferior, shallow, 5—7-chambered, with 5—7 sutural ridges on the flat top; placentas on the floor or outer wall of the chambers. *Capsule* shallow, very shortly and broadly obconic, with 5—7 very prominent and thin sutural ridges on the flat top, 5—7-locular, with 5—7 valves; valves reflexed or widely spreading; expanding keels more or less widely diverging, broad and flattish at the basal part, with the inner edges raised, with narrow marginal wings; loculi shallow, somewhat acutely roofed with membranous loculus-wings; placental tubercle absent. *Seeds* numerous in each loculus, ovoid, pointed at one end.

Dwarf bushy succulent plants, 2—4 inches high, with crowded erect stout branches which are constricted at the nodes into short and often bead- or button-like joints; leaves opposite, of two kinds and only one pair of each kind produced annually; the first pair to appear when growth commences are rudimentary and sometimes scarcely more than a short fleshy sheath, with its semicircular lips closed together into a bag-like or globular body but, by the growth of the second pair of leaves, the lips are pushed apart and remain surrounding the base of the joint formed by the second pair which are long and nearly cylindric but more or less flattened on the upper side and very shortly united at the base, papulose; flowers solitary terminal, pedicellate; pedicel long, papillate, with a pair of rudimentary leaves sheathing the base.

Species 12, recorded from Namaqualand and the Van Rhynsdorp district. (Type: *M. moniliformis* (Thunb.) Schwant.)

2405 **MOSSIA** N. E. Br., Gard. Chron., vol. 87, p. 151 (1930)

Calyx produced into a very short tube above its union with the ovary, subequally 5-lobed above. *Petals* arising at the base of the calyx-lobes and above the top of the ovary, in 1—2 series, shorter than the calyx-lobes. *Stamens* numerous, erect, in a ring around the stigmas; staminodes 0. *Glands* forming a shallow cup or bowl on top of the ovary, with 5 broad crenations on the margin. *Ovary* inferior, concave at the top, 5-chambered; placentas on the floor of the chambers; stigmas 5, erect. *Capsule* small, very shortly and broadly obconic, 5-locular, with 5 valves; valves closing after expansion; expanding keels closely contiguous throughout and reaching to the apex of the valves, without marginal wings; loculi open or with very rudimentary loculus-wings, without a placental tubercle. *Seed* ovoid, smooth.

A prostrate succulent perennial herb, with distinct internodes on the main stem; leaves opposite, united at the base, trigonous-ovate; flowers solitary, terminal, subsessile or shortly pedicellate, between the leaves.

Species 1, recorded from near Johannesburg, near Alberton, and Lake Chrissie in the Transvaal, and from the Herschel district. (Type: *M. intervallis* (L. Bol.) N. E. Br.)

2405 **MUIRIA** N. E. Br., Gard. Chron., vol. 81, p. 116 (1927)

Calyx 6-lobed down to its union with the ovary; lobes oblong, flattish, with membranous tips. *Petals* numerous, free, in several series, linear, with the inner very narrow and filiform-linear (staminodes?). *Stamens* numerous, connivent-erect; filaments not hairy at the base. *Ovary* externally appearing inferior and very large and pear-shaped but, in reality, partly superior and very shallow, being partly immersed in the very stout

clavate top of the pedicel, 6—7-chambered; glands round the top of the ovary 6—7, broad and nearly contiguous; stigmas 6—7, short and stout, erect or possibly finally spreading. *Capsule* shallow, convex on the top, with the sutures between the valves raised into ridges, 6—7-locular, with 6—7 valves; valves deltoid when expanded horizontally spreading; expanding keels closely contiguous so as to form a stout central keel, with broad membranous marginal wings as long as the valves; loculi open without loculus-wings or a tubercle. *Seeds* many in a loculus, ovoid, slightly compressed, with a nipple at one end, smooth, brown.

Stemless with short fibrous roots; growths more or less compressed-subglobose or compressed ovoid and sometimes slightly angular from mutual pressure, with an obscure short slit-like orifice below the apex on the side turned towards the centre of the clump, very fleshy, velvety-puberulous with adpressed fine hairs; flower solitary, just exserted from the top of the growth, with the clavate pedicel included; bracts none.

Species 2, recorded from the Riversdale district. (Type: *M. hortenseae* N. E. Br.)

2405 **NANATUS** N. E. Br., Gard. Chron., vol. 78, p. 433 (1925)
(*Aloinopsis* Schwant.)

Calyx subequally 5-lobed down to its union with the ovary; some of the lobes with membranous margins. *Petals* numerous, free, in 2 series, all closely imbricating and widely spreading in 1 plane. *Stamens* numerous, collected into a broad cone which is completely exposed to view to its base. *Ovary* inferior, flattish or slightly convex on the top, with 7—10 rather shallow chambers; placentas on the floor or outer walls of the chambers; stigmas 7—10, filiform, nearly or quite as long as the stamens. *Capsule* $\frac{1}{2}$ -globose, slightly convex or flattish on the top, with the sutures slightly raised so as to form a very short central cone, 7—10-locular, with 7—10 valves; expanding keels either contiguous except at the tips, adnate for all their length and nearly as long as the valves, with broad marginal membranous wings that are not united in pairs between the valves, or diverging from their base, not $\frac{1}{2}$ as long as the valve but produced into free awns reaching nearly to the tips of the valves, without marginal wings; loculi open, without or with rudimentary loculus-wings that stand quite erect back to back; placental tubercle 0. *Seeds* either flat and thin or almost winged, somewhat half-moon-shaped and smooth or subglobose with a small point and microscopically tuberculate; flowers sessile or subsessile.

Stemless succulent perennials, with a fleshy rootstock, becoming divided into short branches at the top; leaves opposite, united at the base, arranged in dense rosettes of 3—5 pairs to a growth, lanceolate, linear-lanceolate or ovate, acute, flat or slightly concave on the face, often upcurved at the tip, keeled on the back at least at the apical part, covered with slightly raised dots or small pustules which are often whitish.

Species 7, recorded from the Orange Free State, the Transvaal, and Bechuanaland; also from the Prieska, Kuruman, and Graaff-Reinet districts. (Type: *N. vittatus* (N. E. Br.) N. E. Br.)

NOTE.—See article by A. A. Bullock, *Kew Bulletin*, p. 153 (1938). The specific epithet "vittatum" was first used by N. E. Brown in 1876 for a species of *Mesembryanthemum* and also note by N. E. Brown in *Journal of Botany*, vol. 66, p. 78 (1928).—E. P. P.

2405 **NELIA** Schwantes, in Möllers Deutsche Gärtner-Zeitung, vol. 43,
p. 92 (1928)
(*Sterropetalum* N. E. Br.)

Calyx very shortly produced into a cup or tube above its union with the ovary, unequally 5-lobed above. *Corolla* not closing day or night after it

has once expanded; petals numerous, in several series and passing into staminodes, narrow, stiff to the touch, all shortly united into a ring or tube at the base. *Stamens* connivent for $\frac{1}{2}$ their length with the upper part, abruptly deflexed and tortuous, bearded at the basal part. *Ovary* inferior, flattish or very slightly convex at the top, 5-chambered, with the placentas on the floor of the chambers; stigmas 5, ascending-spreading. *Capsule* shortly obconic, flattish at the top with the sutures slightly raised at the central part only, 5-locular, with 5 valves; valves recurving when expanded, with the expanding keels contiguous into a very stout convex central keel with broad marginal wings that are not united in pairs between the valves; loculi imperfectly roofed with small membranous and flexible loculus-wings whose edges do not meet, and without tubercles on the outer wall.

Tufted stemless perennials; leaves opposite, shortly united at the base, subterete, smooth, dotless; peduncle solitary, terminal at the side of a new pair of leaves, 1—3-flowered with the lateral flowers also on short bracteate peduncles; pedicels short.

Species 4, recorded from Namaqualand. (Type: *N. meyeri* Schwant.)

NOTE.—The above description taken from N. E. Brown's account of *Sterroptelium* (*Gardener's Chronicle*, vol. 83, p. 266 (1928)), which genus H. Jacobsen (*Verzeichnis der Arten der Gattung Mesembryanthemum L.*, p. 154 (1928)) places as a synonym of *Nelia*.—E. P. P.

2405 OCTOPOMA N. E. Br., Gard. Chron., vol. 87, p. 126 (1930)

Calyx unequally 4—5-lobed down to the ovary. *Petals* numerous, in 2—3 series, free, cuneately linear. *Stamens* erect, collected into a compact column or cone, sometimes becoming lax, often surrounded by a few staminodes; filaments sometimes bearded. *Glands* in a crenulate ring. *Ovary* inferior, convex at the top, 7—10-chambered; placentas on the outer walls of the chambers; stigmas 7—10, subulate. *Capsule* shortly obconic, convex at the top, with slightly raised sutures, 7—10-locular, with 7—10 valves; expanding keels contiguous at the basal half, diverging above, awned or awnless at the tips, without wings; loculi roofed with membranous loculus-wings, with a placental tubercle.

Very dwarf bushily branched perennial succulents; branches succulent when young, becoming woody with age, with distinct short internodes; leaves opposite, united at the base and often continuous with the stems, short; flowers terminal, 1—3 to a branch, subsessile or shortly pedicellate.

Species 3, recorded from Namaqualand, the Clanwilliam and Riversdale districts. (Type: *O. octojuge* (L. Bol.) N. E. Br.)

2405 OOPHYTUM N. E. Br., Gard. Chron., vol. 79, p. 48 (1926)

Calyx produced above its union with the ovary into a short green (not membranous) tube, 6—7-lobed above. *Corolla* of numerous petals in 2—3 series, probably free, but in the withered flowers seen apparently united at the base into a very short tube, which may have been due to partial deliquescence and adhesion of the parts(?). *Stamens* many, erect. *Style* 0; stigmas 6 or perhaps sometimes 5, filiform. *Ovary* $\frac{1}{2}$ - or more than $\frac{1}{2}$ -superior, depressed and with 6 ridges on the top, 6-chambered; placentas on the floor of the chambers. *Capsule* 6-locular, with 6 valves and each valve with its expanding keels closely contiguous, so as to form 1 stout central keel distinct from the chamber-partitions and having broad spreading membranous marginal wings that are sometimes united in pairs between the valves; chambers open, without chamber-wings. *Seeds* several in each loculus, small, compressed, with a nipple at the narrow end.

Perennials, less than an inch high, tufted, succulent; growths of small ovoid (or under cultivation elongated-ovoid) soft and pulpy bodies, with a small fissure

at the apex, having its lips closed or gaping; flower solitary, partly or just exerted from the notch.

Species 2, recorded from the Van Rhynsdorp district. (Type: *O. oviforme* (N. E. Br.) N. E. Br.)

2405 PERISSOLOBUS N. E. Br., Gard. Chron., vol. 89, p. 294 (1931)

Calyx subequally 8-lobed down to its union with the ovary. *Corolla* only seen in an undeveloped bud and the petals appear to be united. *Stamens* very numerous, erect, not collected into a cone; filaments not bearded at the base. *Ovary* flat, with a slight central depression at the top, slightly 7—8-grooved, 7—8-chambered; placentas on the outer wall or floor of the chambers; stigmas 7—8, subulate, erect. *Capsule* obconic below, flattish, with 7—8 much-raised and gaping sutures on the top, 7—8-locular, with 7—8 valves; valves spreading when expanded, brown; expanding keels narrowly diverging from the base, much raised, thin, with minutely toothed acute edges, produced into straight awns extending to the tip of the valve, furnished below the awns with irregularly toothed marginal wings; loculi somewhat acutely roofed with membranous loculus-wings; placental tubercle small, scarcely forming any obstruction at the opening.

A very dwarf succulent perennial, forming large clumps; branches short, very stout; leaves opposite, densely crowded in 2—3 living pairs and numerous dead ones to a growth, forming dense clusters, ascending, shortly united at the base, trigonous, acute, with acute edges and keel, smooth, glabrous; flowers solitary, terminal, pedicellate, with a pair of small leaves at the base of the pedicel.

Species 1, recorded from the Somerset East district. (Type: *P. bijlii* N. E. Br.)

2405 PHYLLOBOLUS N. E. Br., Gard. Chron., vol. 78, p. 413 (in Key only); in Phill. Gen. S. Afr. Fl. Pl., p. 246 (1926)

Calyx produced above the ovary into a very short tube, 5-lobed above. *Petals* numerous, narrowly linear, united at the base into a short tube. *Stamens* numerous, in several series arising from the corolla-tube. *Ovary* $\frac{1}{2}$ -superior, 5-chambered; placentas axile; stigmas 5, erect. *Fruit* unknown.

Stemless perennials; rootstock thick and fleshy, divided into very short branches at the top, leafless for part of the year; leaves 10—20 together, crowded into small radical rosettes, alternate, terete, with a flattened or sheath-like base, papillate; flowers solitary, subsessile or shortly pedicellate.

Species 4, recorded from Namaqualand, the Calvinia and Clanwilliam districts. (Type: *P. pearsonii* N. E. Br.)

2405 PIQUETIA N. E. Br., Gard. Chron., vol. 78, p. 433 (1925) (in Key only); in Phill. Gen. S. Afr. Fl. Pl., p. 248 (1926)

Calyx 5-lobed, with the tube above its union with the ovary spread out into a broad and shallow saucer-shaped limb or cup. *Petals* lax, with small elliptic blades and long slender stalks, united at the base with the staminodes and stamens into a solid ring around the top of the saucer-like calyx-cup. *Stamens* and *staminodes* numerous and, together with a few inflexed petals, all closely contiguous and connivent into a dome covering the centre of the flower, at first quite concealing the stigmas, afterwards separating so as to leave 4—5 slit-like openings in the dome; stamens abruptly inflexed, with the anthers pendulous. *Ovary* inferior, concave at the top, 8—10-chambered; placentas on the outer walls of the chambers, stigmas 8—10, broad, flattened, obtuse and minutely branched, radiating closely upon the top of the ovary in a star-like manner. *Capsule* 8—10-locular, with 8—10 valves; valves with the expanding keels contiguous below, diverging above, ending in awn-like points, without wings; loculi roofed with flexible mem-

branous wings, but without tubercles at the openings. *Seed* compressed, subglobose.

Perennial succulent shrub, with distinct internodes; leaves opposite, subequal, slightly united at the base, laterally compressed, 3-angled, dotted.

Species 1, recorded from the Piquetberg district. (Type: *P. pillansii* (Kensit) N. E. Br.)

2405 PLATYTHYRA N. E. Br., Gard. Chron., vol. 78, p. 412 (1925)

Calyx produced above its union with the ovary into a short tube, very unequally 4-lobed above, with 2 of the lobes large and leaf-like. *Petals* very much shorter than the calyx-lobes, linear, united into a short tube at the base, arising at the middle of the produced calyx-tube. *Stamens* numerous, in many series, arising from the corolla-tube, erect. *Ovary* partly superior, 4-chambered; placentas axile; stigmas 4, small, stout, obtuse, sessile. *Capsule* 4-locular, with 4 valves; valves recurving when wetted, very broad, each with 2 thin and deeply parallel (or subcontiguous?) expanding keels toothed all along their tops, with an inflexed thin membranous flap or wing turned back from their tips and attached to the valve about midway between the keels and the margin of the valve and forming a sort of pocket on the outer side of each keel; loculi open, no loculus-wings or tubercles. *Seed* moderately large for the group, reniformly D-shaped, minutely tuberculate.

Perennial; rootstock a cluster of long fleshy roots; stem herbaceous, prostrate, triangular or quadrangular, with distinct internodes, glabrous; leaves opposite, petiolate, ovate, or lanceolate, flat; flowers solitary, axillary or in the forks of the branches, pedicellate; bracts none.

Species 1, recorded from the Uitenhage district. (Type: *P. haeckeliana* (Berger) N. E. Br.)

2405 PLEIOSPILOS N. E. Br., Gard. Chron., vol. 80, p. 89 (1926)
(*Punctillaria* N. E. Br.)

Calyx 5—6-lobed nearly or quite down to its junction with the ovary, or produced into a short tube or cup. *Petals* numerous, free, linear, arising round the margins of the top of the ovary. *Stamens* numerous, erect. *Staminodes* 0. *Ovary* inferior, 9—15-chambered; placentas down the centre of the outer walls of the chambers and extending a short distance up the central axis; stigmas 9—15, filiform, sessile. *Capsule* subhemispherical, 9—15-locular and with 9—15 valves; valves reflexed when wetted, each with a pair of parallel expanding keels adnate up to the middle of the valve and then free and the free part bearing a triangular membranous wing, with the wings uniting with the wings of the adjacent valves in pairs or becoming free and standing erect between the valves; loculi acutely roofed by the rather rigid loculus-wings or separated elements of the chamber-partitions, turned back at the opening and somewhat resembling the mouth of a trumpet, so that the whole series of roofs is raised into a sort of crown-like structure above the level of the expanding keels, with or without tubercles at the mouth of the loculi. *Seed* compressed-ovoid, with a nipple at one end, microscopically tuberculated, dark brown.

Very dwarf stemless succulent perennials; leaves opposite, normally 2 or, when making a new pair, 4 to each plant or growth, equal, ovate, very stout and thick, as broad as long, or less than twice as broad as long, firm, grey-green or brownish, usually conspicuously dotted; flowers solitary or 2—4 to a growth, terminal between the leaves, sessile or shortly pedicellate, bracteate.

Species 35, recorded from the Van Rhynsdorp, Laingsburg, Fraserburg, Graaff-Reinet, Aberdeen, and Oudtshoorn districts. (Type: *P. bolusii* (Hook. f.) N. E. Br.)

2405 PRENIA N. E. Br., Gard. Chron., vol. 78, pp. 412 and 433 (1925)

Calyx produced above its union with the ovary into a short tube, 4—5-lobed above. *Petals* numerous, in 2—3 series, united at the base into a short tube; arising just above the union of the calyx with the ovary. *Stamens* numerous, arising from the tube of the corolla, erect; staminodes 0. *Ovary* partly superior, 5-chambered; placentas axile; stigmas 5, filiform, as long as the stamens. *Capsule* (where known) obconic, $\frac{1}{2}$ -superior, 5-locular, with 5 valves; each valve with the expanding keels closely contiguous, forming an acute central keel, with large marginal wing-like submembranous flaps standing erect or infolded towards the keel; loculi open, without loculus-wings or tubercles. *Seed* compressed, somewhat D-shaped in outline, minutely tuberculate.

Papillate succulent perennials, either with a short branching main stem bearing tufts of crowded leaves at the end from which decumbent flowering branches arise, or with long prostrate stems having distinct internodes; leaves opposite, sessile, several times longer than broad, linear-lanceolate, flat or channelled above and keeled or rounded on the back; flowers in terminal lax few-flowered cymes or occasionally solitary.

Species 3, recorded from the Cape and Clanwilliam districts. (Type: *P. pallens* (Ait.) N. E. Br.)

2405 PREPODESMA N. E. Br., Gard. Chron., vol. 89, p. 389 (1931)

Calyx subequally 5-lobed down to its union with the ovary. *Petals* in 3—4 series, free, linear, laxly arranged. *Stamens* numerous, erect in a cylindric column—that is, prominent and conspicuous to its base—the inner slightly bearded at the base; staminodes 0. *Ovary* inferior, shortly conical, with sutural ridges on the top, 5—6-chambered; placentas on the outer wall of the chambers; stigmas 5—6, erect, filiform. *Capsule* not seen.

Stemless succulent perennials, with a fleshy rootstock; leaves opposite, in 2—4 pairs to a growth, crowded, fleshy, trigonous, keeled, smooth, with immersed dark-green dots, usually velvety to the touch from being covered with microscopic points.

Species 2, recorded from Griqualand West. (Type: *P. orpenii* (N. E. Br.) N. E. Br.)

2405 PSILOCAULON N. E. Br., Gard. Chron., vol. 78, p. 433 (1925);
in Phill. Gen. S. Afr. Fl. Pl., p. 247 (1926)

Calyx 4—5-lobed almost down to its union with the ovary or with a very short tube above that union. *Petals* numerous, linear, united at the base into a tube which is sometimes very short. *Stamens* numerous, erect. *Ovary* $\frac{1}{2}$ -superior, 4—5-chambered; placentas axile; style 0; stigmas 4—5, filiform. *Capsule* $\frac{1}{2}$ -superior, 4—5-locular, with 4—5 valves; valves with the expanding keels closely contiguous into 1 central keel and their margins with membranous wings inflexed upon the keel; loculi without wings or tubercles. *Seed* compressed, somewhat D-shaped or obtusely triangular in outline.

Much-branched succulent perennials, often erect bushes but sometimes decumbent; branches continuous or jointed, with distinct internodes; leaves opposite, sessile, free or very slightly united at the base, small, slender, semi-terete or terete, withering and deciduous, often leaving naked branches; flowers small, terminal in cymes or solitary on lateral branches.

Species 75, ranging from South West Africa and Namaqualand, through the coastal area to the Uitenhage district; also recorded from the Prieska, Calvinia, Beaufort West, Laingsburg, Cradock, and Middelburg districts. (Type: *P. articulatum* (Thunb.) N. E. Br.)

2405 RABIEA N. E. Br., Gard. Chron., vol. 89, p. 53 (1931)

Calyx produced above its union with the ovary into a short cup, subequally or unequally 5-lobed above. *Petals* numerous, free, in 3—4 series, cuneately linear or linear, laxly recurving in an irregular manner in different series. *Stamens* numerous, arising from the top of the calyx-cup and arranged in an erect columnar mass, with their basal parts more or less concealed from view by the base of the petals. *Ovary* inferior, slightly concave at the top or with prominent raised sutures, 9—10- (occasionally 6—8-) deeply chambered; placentas on the outer walls of the chambers; stigmas usually 9 or 10 (occasionally 6—8), subulate, much shorter than the stamens. *Capsule* (seen in only 1 species) obconic, with elevated sutural ridges on the top, usually 9—10- (occasionally 6—8-) locular, usually with 9—10 (occasionally 6—8) valves; expanding keels nearly reaching to the tips of the valves, closely contiguous for $\frac{1}{2}$ their length, then more or less diverging, with acute tips and broad pallid marginal wings; loculi at first roofed with thin membranous loculus-wings which become inrolled as the seeds are shed; placental tubercle absent. *Seed* compressed-ovoid, microscopically tuberculate.

Stemless succulent perennials, with a firm fleshy rootstock, deep-rooting, glabrous; leaves opposite, united at the base, arranged in dense rosettes of 3—4 pairs to a growth, ascending-spreading, linear-lanceolate or ovate, acute, flat on the face, rounded on the back at the basal part and keeled and trigonous at the apical part, covered with slightly raised whitish or greenish pustules or raised dots; flowers solitary, subsessile or pedicellate.

Species 5, recorded from the Transvaal, the Orange Free State, and the Kuruman and Graaff-Reinet districts. (Type: *R. albinota* (Haw.) N. E. Br.)

2405 RHINEPHYLLUM N. E. Br., Gard. Chron., vol. 82, p. 92 (1927) (partly)

Calyx subequally 5-lobed nearly down to its union with the ovary, with the basal part hemispherical. *Corolla* closed during the day, expanding in the evening or at night, fragrant; petals in 1 series, free, scarcely longer than the calyx-lobes. *Stamens* numerous, erect, from an incurved base and the inner densely bearded there. *Ovary* inferior, shallow, slightly elevated at the central part on the top and with the margin (disc) also raised, 5-chambered; placentas on the floor of the shallow chambers; stigmas 5, ascending-spreading, subulate, somewhat plumose. *Capsule* small, shortly obconical, flat on the top, with the sutures slightly raised and gaping, 5-locular, with 5 valves; valves deltoid, reflexed when expanded; expanding-keels as long as the valves, contiguous into a central keel throughout, with broad membranous marginal wings that are not united in pairs between the valves; loculi open, without loculus-wings or tubercles. *Seeds* numerous in each loculus, globose-ovoid, slightly compressed, with a nipple at one end, smooth.

Stemless perennial succulents, night-flowering; leaves opposite, in 1—2 pairs to a growth under natural conditions but in several pairs to a growth under cultivation, thickened upwards or clavate, obtuse, flat on the face rounded or keeled on the back, rough from being covered at the upper part with small hard white pimples; flowers solitary, terminal, pedicellate; bracts none.

Species 9, recorded from the Ladismith, Laingsburg, and Swellendam districts. (Type: *R. muiri* N. E. Br.)

NOTE.—H. Jacobsen, *Verzeichnis der Arten der Gattung Mesembryanthemum L.*, cites *R. pillansii* N. E. Br. as the type of *Neorhine* Swant.—E. P. P.

2405 **RUSCHIA** Schwantes, in Zeitschrift f. Sukkulent., vol. 2, p. 186 (1925—26)

Calyx 4—5-lobed down to the junction with the ovary. *Petals* in 1 to many rows, linear or linear-spathulate. *Stamens* connate to form a cone; filaments usually hairy at the base. *Staminodes* present, few, surrounding the stamens. *Ovary* inferior, slightly to strongly convex or cone-shaped, 4—5-chambered; placentation parietal; stigmas 4—5, broom-like to almost filiform free almost to the base. *Capsule* with rigid locular-walls, 3-angled, very often uniting the dividing placental-walls at the opening of the loculi to form a projection which closes the opening on the under side; valves without wings.

Perennials, normally woody, of various habit; leaves opposite, connate at the base; flowers solitary or in a many-flowered inflorescence; bracts present.

Described species 307, widely distributed.

2405 **SAPHESIA** N. E. Br., Gard. Chron., vol. 91, p. 205 (1932)

Calyx unequally 5-lobed. *Petals* numerous, free, shorter than the calyx-lobes. *Stamens* numerous, erect in a mass, surrounded by staminodes(?). *Ovary* inferior, 5-chambered; placentas on the floor of the very shallow chambers; stigmas 5, erect, filiform. *Capsule* unknown.

Perennial (or biennial?), herbaceous, succulent; leaves opposite, not united at the base, flat, entire; stem branching, with distinct internodes, not woody; flowers solitary, terminal, on long pedicels.

Species 1, locality unknown. (Type: *S. flaccida* (Jacq.) N. E. Br.)

2405 **SCELETIUM** N. E. Br., Gard. Chron., vol. 78, p. 412 (1925) (in Key only); in Phill. Gen. S. Afr. Fl. Pl., p. 245 (1926)

Calyx with a short tube above its union with the ovary, 5-lobed above. *Petals* numerous, in several series, passing into staminodes, all united at the base into a short tube, arising where the calyx-tube is united with the ovary. *Stamens* numerous, connivent-erect, more or less concealed by the much longer staminodes. *Ovary* partly superior, 4—5-chambered; placentas axile; style 0; stigmas 4—5, sometimes, but not always, concealed under the stamens and staminodes. *Capsule* $\frac{1}{2}$ - or more than $\frac{1}{2}$ -superior, 4—5-locular, with 4—5 valves; valves with 1 stout acute expanding keel down its centre; loculi without wings or tubercles. *Seed* compressed, orbicular D-shaped.

Perennial succulent glabrous herbs, with prostrate branches; leaves opposite slightly united at the base, flat or much broader than thick, soft, minutely papillate, without dots, withering (always?) to a skeleton and persisting; flowers terminal, solitary or a few in a cyme.

Endemic; species 21, recorded from the Clanwilliam, Piquetberg, Beaufort West, Matjiesfontein, Laingsburg, Prince Albert, Cradock, Montagu, and Calvinia districts; also recorded from Namaqualand. (Type: *S. tortuosum* (L.) N. E. Br.)

2405 **SKIATOPHYTUM** L. Bol., S. Afr. Gard. & Country Life, vol. 17, p. 435 (1927)

(*Gymnopoma* N. E. Br.)

Calyx obconic, acutely 5-angled on the ovary part, unequally 5-lobed down to its union with the ovary; angles with or without small teeth scattered along them. *Petals* numerous, free. *Stamens* numerous, erect; filaments slender. *Ovary* inferior, shortly conical and 5-angled at the top, 5—6-

locular; placentas on the outer walls of the chambers; stigmas 5, subulate, overtopping the stamens. *Capsule* large, obconic, 5-angled, 5-locular, with 5 valves; valves without expanding keels and marginal wings, flattish within, not expanding by being wetted, but separating and spreading when the capsule is ripe and dry and remaining so without closing again; loculi deep, open, without loculus-wings or tubercles; the thin loculus-partitions rising in a conical manner much above the level of the bases of the valves. *Seed* compressed, somewhat kidney-shaped, tuberculate.

Biennial or annual; root stout, fleshy, branching; leaves opposite or alternate, not united at the base, flat, petiolate, or spatulate-lanceolate; flowers 2—5 in a terminal cyme, sometimes solitary, pedicellate.

Species 1, recorded from the Cape, Piquetberg, and Clanwilliam districts. (Type: *S. tripolium* (L.) L. Bol.)

NOTE.—In *South African Gardening and Country Life*, Dr. Bolus cites a name only. The above description is taken from N. E. Brown's account in the *Gardener's Chronical*, vol. 83, p. 194 (1928), of *Gymnopa* which H. Jacobsen in *Verzeichnis der Arten der Gattung Mesembryanthemum* L., p. 191 (1938) places as a synonym of *Skiatophytum*.—E. P. P.

2405 SMICROSTIGMA N. E. Br., Gard. Chron., vol. 87, p. 186 (1930)

Calyx unequally 5-lobed down to the ovary. *Petals* numerous, free, in about 3 series, cuneately linear, horizontally spreading. *Stamens* in several superposed series, short, all inflexed; filaments bearded; staminodes very numerous, in 3—4 series, filiform, all inflexed and partly concealing the stamens, bearded below, recurved at the tips. *Ovary* inferior, flattish on the top, 7—10-chambered; placentas on the outer walls of the chambers; stigmas 7—10, very short or minute. *Capsule* obconic, slightly convex, with 7—10 prominent sutures at the top, 7—10-locular, 7—10-valved; valves horizontal when expanded and closing after expansion; expanding keels with rounded edges, contiguous at the basal part, with diverging acute or awned tips, without marginal wings; loculi roofed with flexible loculus-wings, without a placental tubercle. *Seed* compressed-ovoid, with a short point, minutely tuberculate.

A dwarf shrubby succulent perennial; branches succulent, becoming woody with age, with distinct internodes; leaves opposite, united at the base and continuous with the stem, small, deltoid-trigonal; flowers solitary, terminal, subsessile or very shortly pedicellate.

Species 1, recorded from the Montagu, Robertson, and Riversdale districts. (Type: *S. viride* (Haw.) N. E. Br.)

2405 SPHALMANTHUS N. E. Br., Gard. Chron., vol. 78, p. 433 (1925)

Calyx produced above its union with the ovary into a short tube or subequally 5-lobed nearly down to the ovary; lobes with leaf-like tips. *Petals* numerous, in 3 or more species united into a short tube at the base, passing into staminodes. *Stamens* numerous, arising from the tube of the corolla, erect, in several series. *Ovary* partly superior or inferior, 5-chambered; placentas axile; style 0; stigmas 4—5. *Capsule* $\frac{1}{2}$ -superior, very convex or dome-like in the upper part, with much-raised sutures, smooth and transparent when young, with usually 5, sometimes 4, valves, usually 5- (sometimes 4-) locular; valves widely spreading or recurved; expanding keels contiguous, forming a central keel, united at the base to the septa and so forming the locular partitions, with broad erect and flap-like marginal wings unfolded upon them; loculi open without loculus-wings or tubercles. *Seed* compressed, rounded or horseshoe-shaped in outline, minutely tuberculate (always?).

Succulent perennials papulose on all the green parts; rootstock tuberous or fleshy; stems prostrate, herbaceous or becoming woody at the base; leaves alternate or opposite or those of the flowering part alternate and the remainder opposite, sessile, semi-terete; flowers solitary and terminal or, by the growth of an axillary branch or branches, 2—6 to a stem and becoming one by one lateral and opposite the leaves, or in lax terminal leafy or bracteate cymes, pedicellate.

Species 14, South Africa without locality, one recorded from Namaqualand. (Type: *S. canaliculatus* (Haw.) N. E. Br.)

2405 TITANOPSIS Schwantes, in Zeitschr. f. Sukkul., p. 178 (1926)
(*Verrucifera* N. E. Br.)

Calyx subequally 6-lobed down to its union with the ovary; lobes sometimes pustulate and 4 of them sometimes with membranous margins. *Petals* free, in 1—2 series, linear. *Stamens* numerous, loosely erect or collected into a cone; filaments sometimes bearded at the base. *Glands* in a crenate ring. *Ovary* inferior or $\frac{1}{2}$ - or more than $\frac{1}{2}$ -superior, flattish or conical at the top, 5—6-chambered; placentas on the outer walls or on the floor of the ovary-chambers, stigmas 5—6 or 10 in 1 species, filiform. *Capsule* broadly and shortly obconic, flat or slightly convex on the top, 5—6-locular, in 1 species 10-locular, 5—6-valved, in 1 species 10-valved; valves as broad as long; expanding keels rather stout and subcontiguous at their basal half, then widely diverging, minutely toothed on the inner edge, excurrent at the margin about half-way up the valve and ending in an awn reaching to the tip of the valve, with a membranous margin to the part below the awn; loculi roofed with membranous semitransparent loculus-wings; placental tubercle absent. *Seeds* many in a loculus, subglobose, with a small point, very minutely tuberculate.

Stemless perennials, with a fleshy rootstock; leaves opposite, crowded in dense rosettes, spatulate, semi-teretely or trigonously clavate, covered with raised whitish or tinted pustules; pustules formed of cells filled with lime; flowers solitary, sessile or pedicellate, expanding in the afternoon.

Species 11, recorded from South West Africa, Griqualand West, and the Hanover, Sutherland, and Van Rhynsdorp districts. (Type: *T. calcarea* (Marl.) Schwant.)

2405 VANHEERDIA L. Bol., Notes on Mesemb. & Allied Gen., pt. 3,
p. 136 (1938)

Calyx subequally 5—9-lobed down to its union with the ovary. *Petals* numerous, free, in about 3 series, linear. *Stamens* numerous, erect; staminal nodes absent. *Ovary* inferior, 7—15-chambered; placentas on the floor of the chambers; style 0; stigmas 7—15, erect, filiform. *Capsule* shallow, flattish on the top, 7—15-locular, 7—15-valved; valves when wetted widely spreading or more or less reflexed; expanding keels more or less diverging, with broad, membranous marginal wings; loculi roofed with flat flexible membranous semitransparent loculus-wings; tubercle absent at the opening. *Seeds* many in each loculus, very small, subglobose, smooth, with a nipple at one end.

Stemless succulent perennials, with the growths (under natural conditions) usually crowded on the top of a deeply descending rootstock, rarely solitary; growths subglobose or compressed-ovoid formed of two (or, when forming a new growth, four) hemispherical or thick ovate equal or unequal leaves united for half or two-thirds of their length, and their free parts pressed closely together, entire or with minute teeth on their edges and sometimes along a slight keel on the top, smooth, glabrous or puberulous with microscopic soft points, green or whitish or dove-grey, without dots; flowers solitary; pedicel or at least the ovary exerted and bearing a pair of bracts included in the body of the growth.

Species 4, recorded from Namaqualand and the Prieska and Ladismith districts. (Type: *V. roodiae* (N. E. Br.) L. Bol.)

2405a

List of genera with incomplete descriptions or descriptions not seen.

ACRODON N. E. Brown, Gard. Chron., vol. 81, p. 12 (1927) (in Key only).

Species 3, recorded from the Mossel Bay and Riversdale districts. (See note by N. E. Brown in Journal of Botany, vol. 66, p. 77 (1928)).

AETHEPHYLLUM N. E. Brown, Möllers Deutsche Gärtner-Zeitung, vol. 43, p. 400 (1928). Species 1, recorded from the Tulbagh district.

AGNIRICTUS Schwantes, in Deutsche Kakteen-Gesellschaft, vol. 2, p. 21 (1930). Species 3, without precise locality.

ALOINOPSIS Schwantes, in Deutsche Kakteen-Gesellschaft, vol. 3, p. 177 (1925-26). H. Jacobsen places many of the described species in the genera *Rabiea*, *Titanopsis*, *Nananthus*, *Prepodesma*, *Deilanth* and *Aristocaulon*.

ARIDARIA N. E. Brown, Gard. Chron., vol. 78, p. 433 (1925) (in Key only).

ASTRIDIA Dinter et Schwantes, Zeitschrift für Sukkulantenkunde, vol. 3, pp. 14, 16, 106 (1927-28). N. E. Brown in Journal of Botany, vol. 66, p. 266 (1928), suggests that the genus should be placed under *Mesembryanthemum*. Recorded species 3 from South West Africa and Namaqualand.

BERGERANTHUS Schwantes, in Zeitschrift für Sukkulantenkunde, vol. 3, p. 179 (1927-28). See note by N. E. Brown in Journal of Botany, vol. 66, p. 266 (1928).

BERRISFORDIA L. Bolus, Notes on *Mesembryanthemum* and some allied genera, pt. 2, p. 313 (1928). 1 species recorded from Namaqualand. a *Conophylo foliis hornotinis* 4, "corpusculum" haud formentibus.

BRAUNSLIA Schwantes, in Die Gärtenwelt, vol. 32, p. 644 (1928). Two of the species described by Schwantes, H. Jacobsen places in the genus *Echinus* L. Bol.

CALAMOPHYLLUM Schwantes, in Zeitschrift für Sukkulantenkunde, vol. 3, pp. 15, 28, 106. See N. E. Brown in Journal of Botany, vol. 66, p. 322 (1928). Recorded species 3, without precise locality.

CALLISTIGMA Dinter & Schwantes, in Die Gärtenwelt, vol. 32, p. 644 (1928).

CARRUANTHUS Schwantes, in Zeitschrift für Sukkulantenkunde, vol. 2, p. 181 (1926). See N. E. Brown in Journal of Botany, vol. 66, p. 325 (1928). Species 1, recorded from the Willowmore district.

CHASMATOPHYLLUM Dinter & Schwantes, Zeitschrift für Sukkulantenkunde, vol. 3, pp. 15, 17 (1928).

CLERETUM N. E. Brown, Gard. Chron., vol. 78, p. 412 (1925). H. Jacobsen transfers all the species described by Dr. N. E. Brown and Dr. L. Bolus to the genera *Dorotheanthus*, *Micropterum*, and *Aethephyllum*. N. E. Brown published the generic name *Cleretum* in 1925, and Schwantes published the name *Dorotheanthus* 2 years later, though in 1928, N. E. Brown recognized the genus *Dorotheanthus* Schwant. when he published a species *D. bellidiformis* (Burm.) N. E. Br. and which H. Jacobsen considers to be the same species as *Cleretum criniflorum* N. E. Br. which is cited by N. E. Brown (Gard. Chron., vol. 82, p. 228 (1927)) as the type of his genus *Cleretum*.

CONOPHYLLUM Schwantes, in Zeitschrift für Sukkulantenkunde, vol. 3, p. 321 (1927-28).

CORPUSCULARIA Schwantes, in Zeitschrift für Sukkulantenkunde, vol. 2, p. 185 (1925-26).

CROCANTHUS L. Bolus, in Flow. Pl. S. Afr., pl. 255 (1927). H. Jacobsen sinks this genus under *Hymenocyclus* Dtr. and Schwant.

CYLINDROPHYLLUM Schwantes, in Zeitschrift für Sukkulantenkunde, vol. 3, pp. 15, 18 (1927-28). Species 5, recorded from the Jansenville, Ladismith, Laingsburg and Prince Albert districts.

- DELOSPERMA** N. E. Brown, Gard. Chron., vol. 78, p. 412 (1925) (in Key only).
- DEPACARPUS** N. E. Brown, Gard. Chron., vol. 87, p. 71 (1930). 1 species recorded from Namaqualand. (Type: *D. tinctus* (L. Bol.) N. E. Br.).
- DERENBERGIELLA** Schwantes, in Die Gärtenwelt, vol. 32, p. 599 (1928). Species 1, recorded from Namaqualand. (Type: *D. luisae* Schwant.).
- DIDYMAOTUS** N. E. Brown, Gard. Chron., vol. 78, p. 433 (in Key only).
- DISPHYMA** N. E. Brown, Gard. Chron., vol. 78, p. 433 (in Key only).
- DOROTHEANTHUS** Schwantes, in Möllers Deutsche Gärtner-Zeitung, vol. 42, p. 283 (1927). Species 6, recorded from South West Africa and the Cape Peninsula. (See note under *Cleretum*). = *Stigmatocarpum* L. Bol.
- DRACOPHILUS** Schwantes, in Zeitschrift für Sukkulentenkunde, vol. 2, p. 183 (1925-26). Species 3, recorded from South West Africa and Namaqualand.
- DROSANTHEMUM** Schwantes, in Zeitschrift für Sukkulentenkunde, vol. 3, pp. 14, 29, 106 (1927-28).
- EBERLANZIA** Schwantes, in Zeitschrift für Sukkulentenkunde, vol. 2, p. 189 (1925-26). Species 9, recorded from South West Africa, the Transvaal, and the De Aar, Laingsburg and Middelburg districts.
- EBRACTEOLA** Dinter & Schwantes, in Zeitschrift für Sukkulentenkunde, vol. 3, pp. 15, 24 (1927-28). Species 2, recorded from South West Africa.
- ECHINUS** L. Bolus, Flow. Pl. S. Afr., pl. 266 (1927). Genus e *Mesembryanthemum apiculato* Kensit, compositum. Ad *Mesembryanthemum* accedit, sed differt stylo stigmatibus interdum aequilongo vel interdum breviori, alis loculi inter se distantibus seminibus processibus longis, sat crassis, onustus. (Type: *E. apiculatum* (Kensit) L. Bol.).
- EURYSTIGMA** L. Bolus, Notes on *Mesembryanthemum* and some allied genera, pt. 2, p. 179 (1930). e *Cryophyto clavato* L. Bol. compositum. Species 1, locality unknown. (Type: *E. clavatum* (L. Bol.) L. Bol.).
- FAUCARIA** Schwantes, in Zeitschrift für Sukkulentenkunde, vol. 2, p. 176 (1925-26). Species 36, recorded from the Somerset East, Albany, Uitenhage, Bedford, Uniondale, Cradock, Graaff-Reinet, Jansenville and Willowmore districts.
- HALENBERGIA** Dinter, in Kakteen und andere Sukkul., p. 158 (1937).
- HENRICIA** L. Bolus, Notes on *Mesembryanthemum* and allied genera, pt. 3, p. 39 (1936). A synonym of *Neohenricia* L. Bol.
- HEREROA** Dinter & Schwantes, in Zeitschrift für Sukkulentenkunde, vol. 2, p. 180 (1925-26). Species 28, recorded from South West Africa, the Hay, Calvinia, Victoria West, Beaufort West, Prince Albert, Laingsburg, Ladismith, Ceres, Willowmore, Swellendam, Robertson, Graaff-Reinet, Uniondale and the Albany districts.
- HERREA** Schwantes, in Möllers Deutsche Gärtner-Zeitung, vol. 42, p. 436 (1927). (Type: *H. nelii* Schwant.).
- HERREANTHUS** Schwantes, in Die Gärtenwelt, vol. 32, p. 514 (1928).
- HYMENOCYCLUS** Dinter & Schwantes, in Möllers Deutsche Gärtner-Zeitung, vol. 42, p. 27 (1927). Species 14, recorded from the Sutherland, Fraserburg, Graaff-Reinet, Cradock, Oudtshoorn, Fauresmith, Albany, Riversdale, Piquetberg and the Van Rhynsdorp districts.
- JUTTADINTERIA** Schwantes, in Zeitschrift für Sukkulentenkunde, vol. 2, p. 182 (1925-26). Species 14, recorded from South West Africa and Namaqualand.
- LAMPFRANTHUS** N. E. Brown, Gard. Chron., vol. 87, pp. 71, 211 (1930). Species 3, distributed from Namaqualand through the coastal area to the Uitenhage and Albany districts, also recorded from the Prince Albert, Matjesfontein, Calvinia and Bedford districts. (Type: *L. multiradiatus* (Jacq.) N. E. Br.).
- MACHAIROPHYLLUM** Schwantes, in Möllers Deutsche Gärtner-Zeitung, vol. 42, p. 187 (1927).
- MACROCAULON** N. E. Brown, Gard. Chron., vol. 81, p. 12 (1927) (in Key only). (Type: *M. candollii* (Haw.) N. E. Br.)

- MALEPHORA** N. E. Brown, Gard. Chron., vol. 81, p. 12 (1927) (in Key only). (Type: *M. mollis* (Ait.) N. E. Br.) Species 1.
- MARLOTHISTELLA** Schwantes, in Die Gärtenwelt, vol. 32, p. 599 (1928). Species 1, recorded from Uniondale. (Type: *M. uniondalis* Schwant.)
- MAUGHANIA** N. E. Brown, in Journ. Cactus and Succul. Soc. America, vol. 2, p. 389 (1930-31). Species 1, recorded from the van Rhynsdorp district. (Type: *M. insignis* N. E. Br.)
- MEYEROPHYTUM** Schwantes, in Möllers Deutsche Gärtner-Zeitung, vol. 42, p. 436 (1927). Species 1, recorded from Namaqualand. (Type: *M. meyeri* Schwant.)
- MICROPTERUM** Schwantes, in Möllers Deutsche Gärtner-Zeitung, vol. 43, p. 17 (1928). Species 7.
- NAMIBIA** Dinter & Schwantes, in Zeitschrift für Sukkulentenkunde, vol. 2, p. 184 (1925-26). Species 3, recorded from South West Africa.
- NEOHENRICIA** L. Bolus, Journ. S. Afr. Bot., vol. 4, p. 51 (1938). e (?) *M. sibbettii* L. Bol. compositum. Ad *Stomatium* proxime accedit, sed ramis primariis ramulisque elongatis reptantibusque, foliis apicem versus tuberculatis, pedunculis elongatis teretibus gracillimis, petalis paucioribus laxis, inferne non coalitis, staminibus paucioribus differt. Capsule ei *Stomatii* simillima.
- NEORHINE** Schwantes in Monatsschrift der Deutschen Kakteen-Gesellschaft vol. 2, p. 22 (1930). Species 1, recorded from the Laingsburg district. (Type: *N. pillansii* (N. E. Br.) Schwant.)
- ODONTOPHORUS** N. E. Brown, Gard. Chron., vol. 81, p. 12 (1927) (in Key only). (Type: *O. marlothii* N. E. Br.) Species 5, recorded from Namaqualand.
- OPHTHALMOPHYLLUM** Dinter & Schwantes, in Zeitschrift für Sukkulentenkunde, vol. 3, pp. 15, 21 (1927-28).
- OPOPHYTUM** N. E. Brown, Gard. Chron., vol. 78, p. 412 (1925) (in Key only). Species 5, recorded from Namaqualand; also found in tropical Africa, Egypt, and Arabia.
- ORTHOPTERUM** L. Bolus, Gard. Chron., vol. 82, p. 281 (1927). Species 2, recorded from the Uitenhage and Albany districts.
- OSCULARIA** Schwantes, in Möllers Deutsche Gärtner-Zeitung, vol. 42, p. 187 (1927). Species 5, recorded from the Tulbagh district.
- PEERSIA** L. Bolus, in Flow. Pl. S. Afr., vol. 7, pl. 264 (1927). Genus e *Mesembryanthemo macradenio* L. Bol. compositum. Fructus generis *Delosperma*, sed foliis confertis, internodiis haud evidentibus; floribus solitariis vespertinis; ovario supra plano; stigmatibus gracillimis, stamina superantibus; ceterisque differt. Species 1, recorded from the Ceres, Laingsburg and Prince Albert districts. (Type: *P. macradenia* (L. Bol.) L. Bol.)
- PERELOBUS** N. E. Brown, in Möllers Deutsche Gärtner-Zeitung, vol. 43, p. 400 (1928). Species 1, recorded from the Calvinia district. (Type: *P. maughanii* N. E. Br.)
- POLYMITA** N. E. Brown, Gard. Chron., vol. 87, p. 72 (1930) (in Key only). Species 1. (Type: *P. pearsonii* N. E. Br.)
- PSAMMOPHORA** Dinter & Schwantes, in Zeitschrift für Sukkulentenkunde, vol. 2, p. 188 (1925-26). Species 5, recorded from South West Africa and Namaqualand.
- RHOMBOPHYLLUM** Schwantes, in Zeitschrift für Sukkulentenkunde, vol. 2, p. 180 (1925-26). Species 3, recorded from the Graaff-Reinet and Uitenhage districts.
- RHOPALOCYCLUS** Schwantes, in Die Gärtenwelt, vol. 32, p. 599 (1928) Species 2, recorded from the Robertson district.
- RIMARIA** N. E. Brown, Gard. Chron., vol. 78, p. 413 (1925) (in Key only). Species 5, recorded from Namaqualand and the Calvinia districts.
- SCHLECHTERANTHUS** Schwantes, in Monatsschrift der Deutschen Kakteen-Gesellschaft, vol. 1, p. 16 (1929). Species 1, recorded from Namaqualand. (Type: *S. maximiliani* Schwant.)
- SCHONLANDIA** L. Bolus, Flow. Pl. S. Afr., vol. 7, pl. 259 (1927). According to H. Jacobsen a synonym of *Corpuscularia* Schwant.

- SCHWANTESIA** Dinter, in Möllers Deutsche Gärtner-Zeitung, vol. 42, p. 234 (1927). Species 10, recorded from South West Africa, Namaqualand and the Upington districts.
- SEMNANTHE** N. E. Brown, Gard. Chron., vol. 81, p. 12 (1927) (in Key only). Species 1. (Type: *S. lacera* (Haw.) N. E. Br.)
- STIGMATOCARPUM** L. Bolus, Notes on *Mesembryanthemum* and some allied genera, pt. 1, p. 131 (1928) = *Dorotheanthus* Schwant.
- STOBERIA** Dinter & Schwantes, in Zeitschrift für Sukkulantenkunde, vol. 3, pp. 14, 106 (1927–28). Species 3, recorded from South West Africa.
- STOMATIUM** Schwantes, in Zeitschrift für Sukkulantenkunde, vol. 2, p. 175 (1925–26). Species 36, recorded from Namaqualand, the Van Rhynsdorp, Clanwilliam, Beaufort West, Laingsburg, Victoria West, Fraserburg, Sutherland, Carnarvon, Kenhardt, Cradock, Fauresmith, Middelburg, Somerset East and the Herschel districts.
- SYNAPTOPHYLLUM** N. E. Brown, Gard. Chron., vol. 78, p. 412 (1925) (in Key only). Species 1, recorded from South West Africa. (Type: *S. juttæ* (Dtr. et Berger) N. E. Br.)
- THYRASPERMA** N. E. Brown, Gard. Chron., vol. 78, p. 412 (1925). = *Apatesia* N. E. Br.
- TRICHODIADEMA** Schwantes, in Zeitschrift für Sukkulantenkunde, vol. 2, p. 187 (1925–26). Species 26, recorded from the Bredasdorp district through the coastal area to the Port Elizabeth district; also recorded from the Cradock, Laingsburg, Victoria West, Fauresmith, Somerset East and the Caledon districts and in Namaqualand.
- VANZIJLIA** L. Bolus, Flow. Pl. S. Afr., vol. 7, pl. 262 (1927). Genus *e Mesembryanthemum annulato* Berger (= *M. angustipetalo* L. Bol. compositum) propter fructum ad genus *Leiopoldtia*, proxime accedit, sed paribus foliorum inter se difformitris, foliis saepe membranceo-marcescentibus, floribus solitariis differt. (Type: *V. annulata* (Berger) L. Bol.)
- ZEUKTOPHYLLUM** N. E. Brown, Gard. Chron., vol. 81, p. 12 (1927) (in Key only). Species 1, recorded from the Riversdale district. (Type: *Z. suppositum* (L. Bol.) N. E. Br.)

56. PORTULACACEAE

Flowers bisexual, rarely unisexual. *Sepals* 2, imbricate, herbaceous, more rarely rigid, deciduous or more rarely subpersistent, usually free, more rarely adnate to the base of the ovary. *Petals* 5, more rarely 4 or 6, hypogynous or perigynous, ephemeral, fugacious, or persistent, sometimes accrescent. *Stamens* 5 to many, hypogynous, more rarely perigynous; staminodes sometimes present. *Ovary* superior, very rarely $\frac{1}{2}$ -inferior, 1-chambered, with a solitary basal ovule or ovules many on a free-central placenta; style 2–8-fid. *Fruit* normally a capsule splitting into 3–6 valves or dehiscent transversely about the middle, rarely indehiscent. *Seed* subglobose or compressed, shining, often granulated, with or without an appendage; embryo more or less curved; endosperm present.

Herbs or undershrubs, very rarely small trees; leaves alternate, opposite, or subopposite, more rarely verticillate; stipules present or absent; inflorescence a raceme or a cyme arranged in racemes or panicles or flowers solitary or in small fascicles.

Genera 19; species about 500, natives of Asia, Africa, Madagascar, America, Australia, and New Zealand.

1. Sepals adnate to the base of the ovary; ovary $\frac{1}{2}$ -inferior; fruit dehiscent transversely 5. *Portulaca* Linn.

Sepals free; ovary superior; fruit indehiscent or splitting into valves ... 2

- | | |
|-----------------------|---|
| 2. Ovules many | 3 |
| Ovule solitary | 4 |
3. Stipules 0; flowers in racemose or paniced cymes, rarely solitary
 1. *Salinum* Linn.
 Stipules present; flowers in simple racemes, sometimes on long peduncles
 2. *Anacampseros* Linn.
4. Flowers bisexual, fascicled, usually in groups on shortened terminal
 leafless branchlets 3. *Portulacaria* Jacq.
 Flowers unisexual, rarely bisexual, arranged in fascicles or axillary
 racemes 4. *Ceraria* Pears. & Steph.

2406 **1. TALINUM** Adans., Fam., vol. 3, p. 245 (1763)

Sepals 2, herbaceous, opposite, deciduous or rarely subpersistent. *Petals* 5, very rarely 8—10, hypogynous, ephemeral. *Stamens* 5 to many, attached to the base of the petals; filaments more or less filiform. *Ovary* superior, sessile, 1-chambered, with many ovules on a free-central placenta; style long and cylindric with 3 stigmatic lobes or very short and with 3 very short stigmatic lobes. *Fruit* a capsule, chartaceous, 1-locular, shining, many-seeded, dehiscing by 3 valves, very rarely by 6 valves. *Seed* often black or grey, subreniform or lenticular, more or less compressed, smooth or somewhat tuberculate or striate, with the top of the funicle expanded into a distinct or indistinct appendage; endosperm starchy.

Shrubs, undershrubs, or perennial herbs; leaves more or less fleshy, alternate or subopposite, terete, subterete, or flat; inflorescence a terminal or axillary cyme, raceme, or panicle, rarely flowers solitary.

Species 47, natives of Asia, Africa, and America; 6 species described from South Africa, probably not all specifically distinct; recorded from South West Africa, the north-western districts of the Cape Province, the Orange Free State; absent from Natal but recorded from the Komgha district.

2412 **2. ANACAMPSEROS** Sims, Bot. Mag., t. 1367 (1811)

Sepals 2, rigid or herbaceous, soon deciduous. *Petals* 5, hypogynous, very fugacious. *Stamens* many, adhering to the base of the petals. *Ovary* superior, sessile, 1-chambered, with many ovules on a free-central placenta; style 3-fid. *Fruit* a capsule, ellipsoid or oblong in outline, 3-valved, with the valves often longitudinally divided and then apparently 6-valved. *Seed* angled or laterally compressed, 3-winged or nude.

Low herbs or undershrubs; leaves alternate, ovate or lanceolate, often closely packed on the stem, fleshy, sometimes minute and hidden by the larger chartaceous stipules; stipules often chartaceous or forming hair-like subscarious fascicles in the axils of the leaves; flowers sessile, involucreted or on elongated racemose peduncles; bracts opposite, scarious.

An African genus of about 67 described species, with 1 species recorded from Australia; the majority of the species occur in South Africa, but those described are probably not all specifically distinct; the species are typical of South West Africa, Namaqualand, the central districts of the Cape Province, but also found in the coastal belt from the Riversdale to the Uitenhage district. (Type: *A. filamentosa* (Haw.) Sims)

2419 **3. PORTULACARIA** Jacq., Collect., vol. 1, p. 160, t. 122 (1786)

Sepals 2, membranous, becoming somewhat rigid, persistent. *Corolla-tube* very short, campanulate or cylindric; lobes 4—5, equal, obovate. *Stamens* 4—7, inserted with the petals; anthers short, often barren. *Ovary* superior, 3-angled, sometimes narrowly 3-winged, 1-chambered, with a single basal

ovule; style short; stigmas 3, slightly spreading. *Fruit* indehiscent, 3-angled, 3-winged.

Glabrous shrubs; leaves fleshy, opposite, obovate; flowers small, fascicled on shortened terminal leafless branchlets.

Endemic; species 2, typical of the scrub formation in the south-eastern districts, but extend in the coastal belt from the Riversdale district to Natal; also found in Namaqualand. (Type: *P. afra* Jacq.)

2419a

4. CERARIA Pearson & Stephens, Ann. S. Afr. Mus., vol. 9, p. 32 (1912)

Flowers unisexual, very rarely single flowers bisexual. *Sepals* 2, short, persistent. *Petals* 5, longer than the sepals, hypogynous, free, at length accrescent. *Stamens* in male flowers 5; in the female flowers reduced to linear staminodes or very rarely with abortive anthers. *Ovary* in male and female flowers 3-angled, with a single basal ovule; style 0 or very short; stigma 2—3-fid. *Fruit* (immature) compressed, asymmetrical, membranous, with a single wing, tightly surrounded by the accrescent corolla; in scarcely mature fruits (seen in 1 species) fleshy, wingless, and surrounded at the base by the accrescent corolla.

Small trees, shrubs, or shrublets, often with a waxy bark; leaves very few, in pairs or fascicled, small, fleshy, flat or terete; flowers in fascicles or axillary racemes.

Endemic; species 4, known only from South West Africa. (Type: *C. namaquensis* (Sond.) Pears. & Steph.)

2421

5. PORTULACA Linn., Sp. Pl., ed. 1, p. 445 (1753)

Sepals 2, adnate to the base of the ovary. *Petals* 4—6, free or joined at the base. *Stamens* 8 to many, inserted at the base of the petals and with them perigynous. *Ovary* semi-inferior, with many ovules on a free-central placenta; style 3—8-fid. *Fruit* a capsule, membranous, dehiscing transversely about the middle. *Seed* laterally compressed, reniform, shining, often granulated.

Diffuse or ascending fleshy herbs, sometimes with a tuberous rootstock; leaves alternate or subopposite, flat or terete; stipules scarious or reduced to fascicles of setae; flowers terminal, sessile or pedicelled.

Species about 100 found in the tropics and subtropics of both hemispheres; 5 species recorded from South Africa fairly widely distributed. (Type: *P. oleracea* Linn.)

57. BASELLACEAE

Flowers bisexual. *Sepals* 2, adnate to the base of the corolla. *Corolla* membranous or fleshy; tube short; lobes imbricate, persistent. *Stamens* 5, inserted at the base of the corolla-lobes and opposite to them; filaments free; anthers very often versatile, with 2 parallel thecae opening longitudinally. *Ovary* superior, 1-chambered, with a single basal ovule; style 3-partite. *Fruit* indehiscent, surrounded by the persistent often fleshy corolla. *Seed* almost spherical, with a membranous testa; embryo spirally twisted; endosperm copious.

Glabrous twining herbs; leaves alternate, broad, entire; inflorescence a spike, raceme, or panicle.

Genera 5, with about 20 species, natives of Asia, Columbia, South America, and tropical America.

2427

BOUSSINGAULTIA H. B. K., Nov. Gen. et Sp., vol. 7.
p. 194, t. 645 bis (1825)

Sepals 2, adnate to the base of the corolla. *Corolla* membranous or fleshy; tube short; lobes 5, oblong, obtuse, concave, spreading. *Stamens* 5, inserted at the base of the corolla-lobes; filaments filiform-subulate or expanded and ovate at the base; anthers oblong, versatile, included. *Ovary* subglobose; style often thick and with 3 subfleshy stigmas.

Glabrous twining herbs; leaves alternate, petioled or subsessile, ovate, elliptic, or cordate, thick or fleshy, entire; flowers in axillary and terminal simple racemes or the branches laxly or densely flowered; bracts at the base of the pedicel persistent or deciduous.

Species 14, natives of tropical America; 1 species naturalized in South Africa. (Type: *B. baselloides* H. B. K.)

58. CARYOPHYLLACEAE

Flowers bisexual, very rarely unisexual. *Perianth* a single whorl or consisting of sepals and petals. *Sepals* usually 5, more rarely 4, free or connate at the base or high up to form a distinct tube. *Petals* usually 5, more rarely 4, rarely 0, entire, bifid, notched or deeply cut, with or without distinct claws, with or without scales at the base of the lamina. *Stamens* usually 5 or 10, sometimes less than 5; staminodes sometimes present; anthers 2-theous. *Hypogynous disc* when present, annular or glandular or columnar. *Ovary* superior, 1-chambered, more rarely incompletely 2—3-chambered below the middle, with a single ovule on a basal funicle or several to many ovules on a free-central placenta; styles distinct or united at the base and 2—3-fid above. *Fruit* a capsule, splitting into as many valves or twice as many valves as there are styles or, in the genera with a single perianth, the fruit is a nut or utricle enclosed in the persistent perianth. *Seed* often compressed, sometimes lenticular or subglobose, smooth or tuberculed, sometimes glandular or with a reticulated testa, more rarely winged; embryo annular or hooked, more rarely straight; endosperm present.

Annual or perennial herbs very rarely woody at the base or undershrubs, often dichotomously branched, tufted or erect; leaves opposite, alternate or whorled; stipules present or 0; inflorescence often cymose, with the cymes racemose or paniced or an axillary or terminal cyme or cluster, sometimes a dichotomous cyme, more rarely flowers solitary.

Genera about 80, with about 2,000 described species, mostly native of the north temperate zone.

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|--|-----|-----|----------------------|----|
| 1. Perianth subsucculent, urceolate, with the mouth of the tube closed by a thickened lobed disc | ... | ... | 10. Pollichia Dryand | 2 |
| Perianth various but not as above; sepals free or united | ... | ... | ... | 2 |
| 2. Sepals free | ... | ... | ... | 3 |
| Sepals united | ... | ... | ... | 11 |
| 3. Stipules 0 | ... | ... | ... | 4 |
| Stipules present | ... | ... | ... | 7 |
| 4. Fruit splitting into as many valves as there are styles | ... | ... | 3. Sagina Linn. | 5 |
| Fruit splitting into twice as many valves as there are styles | ... | ... | ... | 5 |
| 5. Petals entire or 0 | ... | ... | 4. Arenaria Linn. | 6 |
| Petals deeply 2-fid | ... | ... | ... | 6 |

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|---|--------------------------------------|----|
| 6. Stamens 5; styles 3 | 1. <i>Stellaria</i> Linn. | |
| Stamens 10; styles 5 | 2. <i>Cerastium</i> Linn. | |
| 7. Sepals scarious, long acuminate | 9. <i>Polycarpaea</i> Lam. | |
| Sepals herbaceous | ... | 8 |
| 8. Sepals winged | 8. <i>Polycarpon</i> Linn. | |
| Sepals not winged | ... | 9 |
| 9. Petals 2—4-lobed or -partite... .. | 7. <i>Drymaria</i> Willd. | |
| Petals entire or 0 | ... | 10 |
| 10. Styles 5... .. | 5. <i>Spergula</i> Linn. | |
| Styles 3... .. | 6. <i>Spergularia</i> J. et C. Presl | |
| 11. Ovary with a single ovule | ... | 12 |
| Ovary with many ovules | ... | 14 |
| 12. Styles 3... .. | 11. <i>Corrigiola</i> Linn. | |
| Styles 2 or style short and 2-fid | ... | 13 |
| 13. Perianth herbaceous | 12. <i>Herniaria</i> Linn. | |
| Perianth becoming crustaceous | 13. <i>Scleranthus</i> Linn. | |
| 14. Calyx-tube winged | 16. <i>Vaccaria</i> Medik. | |
| Calyx-tube not winged | ... | 15 |
| 15. Ovary on a long gynophore, fused to the columnar disc | 15. <i>Silene</i> Linn. | |
| Ovary not on a long gynophore | ... | 16 |
| 16. Calyx surrounded at the base by 2 to several bracts | 17. <i>Dianthus</i> Linn. | |
| Calyx not surrounded by bracts at the base | 14. <i>Agrostemma</i> Linn. | |

2429 **1. STELLARIA** Linn., Sp. Pl., ed. 1, p. 421 (1753)
(*Alsine* Linn. pro parte)

Sepals 5. *Petals* 5, deeply bifid. *Stamens* 5. *Ovary* 1-chambered, with several ovules on a free-central placenta; styles 3. *Fruit* a capsule, splitting into 6 valves.

Slender herbs, usually glabrous, tufted or laxly ascending; leaves opposite, narrow or broad; stipules 0; inflorescence a panicle of cymes or rarely flowers axillary.

A cosmopolitan genus of about 100 species; 1 or 2 species found naturalized in South Africa and widely distributed. (Type: *S. holostea* Linn.)

2430 **2. CERASTIUM** Linn., Sp. Pl., ed. 1, p. 437 (1753)

Sepals 5. *Petals* 5, deeply bifid. *Stamens* 10. *Ovary* 1-chambered, with several ovules on a free-central placenta; styles 5. *Fruit* a capsule splitting into 10 valves. *Seed* compressed, often tubercled.

Herbs, usually pubescent or hirsute; leaves opposite, various; stipules 0; inflorescence terminal, consisting of a number of cymes arranged dichotomously.

Described species about 100 but probably not all valid; 4 species recorded from South Africa but not all native; found chiefly in the eastern part of the Union but generally distributed. (Type: *C. arvense* Linn.)

2433 3. SAGINA Linn., Sp. Pl., ed. 1, p. 128 (1753)

Sepals 4—6. *Petals* as many as the sepals, entire or slightly emarginate, sometimes very small or 0. *Stamens* as many as the sepals or twice as many or fewer by abortion. *Ovary* 1-chambered, with many ovules on a free-central placenta; styles 4—5. *Fruit* a capsule, splitting into as many valves as there are styles. *Seed* brownish, slightly granulated.

Annual or perennial tufted herbs; leaves opposite, linear or subulate, connate at the base; stipules 0; flowers solitary, small, often on long pedicels.

Species between 20—30, natives of the northern extra-tropical regions, South America, the Himalaya, and Africa; 1 species naturalized in the Transvaal and Natal. (Type: *S. procumbens* Linn.)

2443 4. ARENARIA Linn., Sp. Pl., ed. 1, p. 423 (1753)

Sepals 5. *Petals* 5, entire or 0. *Stamens* 5 or 10. *Ovary* 1-chambered, with several ovules on a free-central placenta; styles 5. *Fruit* a capsule, splitting into 10 lobes. *Seed* compressed, smooth or tuberculated.

Annual or perennial herbs; cauline leaves opposite; stipules 0; inflorescence often a panicle of cymes.

Species about 160, found in cold and temperate regions; 1 or 2 species found naturalized in South Africa. (Type: *A. serpyllifolia* Linn.)

2449 5. SPERGULA Linn., Sp. Pl., ed. 1, p. 440 (1753)

Sepals 5. *Petals* 5, entire. *Stamens* usually 10, sometimes 5. *Ovary* 1-chambered, with many ovules; styles 5. *Fruit* a capsule, splitting into 5 entire valves. *Seed* (in *S. media*) black, biconvex, with a narrow wing on the edge, with glandular hairs.

Annual herbs, with forked or fascicled branches; leaves opposite, linear, with abbreviated leaf-buds in their axils and thus appearing whorled; stipules small, scarious; inflorescence of cymes.

Species 5, found as weeds of cultivation in most parts of the world; 1 species naturalized and common in South Africa. (Type: *S. arvensis* Linn.)

2450 6. SPERGULARIA (Pers.) J. et C. Presl, Fl. Cech., p. 94 (1819)
(*Lepigonum* Wahlb.)

Sepals 5. *Petals* 5, entire, rarely 0. *Stamens* 2—10. *Ovary* 1-chambered, with many ovules on a free-central placenta; styles 3. *Fruit* a 2—3-valved capsule. *Seed* lenticular, glandular, sometimes winged.

Diffuse herbs with forked or fascicled branches; leaves opposite, sometimes fleshy, linear, with abbreviated leaf-buds in their axils and thus appearing whorled; stipules membranous, connate and surrounding the leaf-bases; inflorescence of cymes arranged in racemes.

Species about 20 found in all warm and temperate regions; 2 species recorded from South Africa. (Type: *S. rubra* (L.) J. et C. Presl)

2452 7. DRYMARIA Willd., ex Roemer & Schultes, Syst., vol. 5, pp. xxxi & 406 (1819)

Sepals 5, herbaceous or the margins scarious. *Petals* 5, deeply 2—4-lobed or -partite. *Stamens* 5 or fewer. *Ovary* 1-chambered, with 3 to several ovules on a free-central placenta; style 3-fid. *Fruit* a 3-valved capsule. *Seed* reniform-globose or compressed; embryo coiled round the endosperm.

Diffuse rarely erect herbs, dichotomously branched; leaves opposite, flat, broad or narrow; stipules small, often fugacious; flowers pedicelled, often small and in pairs or inflorescence often a terminal or axillary cyme.

Species about 70, almost all American; 1 species recorded from Australia; 1 species, which is widely dispersed, found in Natal and the Transkei. (Type: *D. cordata* (L.) Willd.)

2453 8. POLYCARPON Linn., Syst., ed. 10, p. 881 (1759)

Sepals 5, keeled or winged, with a scarious margin. *Petals* 5, small, hyaline, entire or emarginate. *Stamens* 3—5. *Ovary* 1-chambered, with few to many ovules on a free-central placenta; style shortly 3-fid. *Fruit* a 3-valved capsule. *Seed* ovoid or lenticular, sometimes pustulate; embryo incurved or almost straight.

Diffuse or dichotomously branched herbs, glabrous or pubescent; leaves flat, opposite or whorled; stipules scarious; inflorescence a crowded bracteate cyme; flowers small.

Species about 16, found in all warm and temperate countries; 1 species found in South Africa as a weed of cultivation.

2455 9. POLYCARPAEA Lam., Journ. Hist. Nat. Paris, vol. 2, p. 8, t. 25 (1792)

Sepals 5, scarious and long-acuminate, rarely herbaceous, not keeled. *Petals* 5, smaller than the sepals, entire, 2-toothed or rarely with the margins shortly toothed. *Stamens* 5. *Ovary* 1-chambered, with few or several ovules on a free-central placenta; style slender, 3-fid or -toothed or capitate. *Fruit* a 3-valved capsule. *Seed* often lenticular, sometimes slightly tuberculed; embryo curved, rarely straight.

Erect annual or perennial herbs, rarely diffuse; leaves opposite or appearing whorled from the presence of axillary fascicles of leaves; stipules scarious; inflorescence a number of lax or contracted or capitate cymes.

Species about 30, natives of warm climates; 1 species recorded from South West Africa, the Transvaal, and Natal. (Type: *P. teneriffae* Lam. = *P. divaricata* (Ait.) Poir)

2467 10. POLLICHIA Dryand, in Ait. Hort. Kew, ed. 1, vol. 1, p. 5 (1789)

Perianth subsucculent, urceolate, with the mouth of the tube closed by a thickened lobed disc; lobes ovate, short, erect. *Stamens* 1—2, inserted on the disc; filaments short; anthers oblong. *Ovary* 1-chambered, with 2, rarely 1, basal ovules on short funicles; style about as long as the ovary, very shortly 2-fid or almost entire. *Fruit* a 1—2-seeded utricle. *Seed* ovoid or oblong in outline; embryo straight or slightly curved.

A branched undershrub; leaves opposite or in false whorls, usually linear, sometimes lanceolate; stipules scarious, free; inflorescence a number of sessile crowded axillary cymes surrounded by white scarious bracts; flowers small, each subtended by a bracteole which becomes thick and fleshy; the bracteoles coniving so as to present the appearance of a succulent berry open at the top.

A monotypic African genus, also found in Arabia; in South Africa fairly widely distributed and recorded as far south as the East London district; appears to be absent from the south-western districts of the Cape Province. (Type: *P. campestris* Soland.)

2469 11. CORRIGIOLA Linn., Sp. Pl., ed. 1, p. 271 (1753)

Calyx-tube campanulate; lobes 5, oblong or ovate, obtuse, with membranous margins. *Petals* (staminodes?) perigynous; filaments short; anthers often

dark brown. *Ovary* 1-chambered, sometimes 3-angled, with a single basal ovule on a long funicle; style very short or almost 0; stigmas 3, sometimes sessile. *Fruit* a globose or ovoid-trigonus nut included in the calyx-tube. *Seed* globose-ovoid; embryo annular, surrounding the copious endosperm.

Annual and perennial herbs, rarely shrubby at the base; leaves opposite and alternate, spatulate or linear; stipules various; inflorescence of axillary and terminal cymes or flowers in clusters; flowers small; bracts and bracteoles small.

Species about 10, cosmopolitan; 2 species recorded from South Africa, occurring in the north-eastern and eastern districts of the Cape Province; also found in the Transvaal and Natal. (Type: *C. littoralis* Linn.)

2476 12. HERNIARIA Linn., Sp. Pl., ed. 1, p. 218 (1753)

Flowers sometimes unisexual. *Perianth-tube* short, turbinate; segments 4—5, equal or unequal, sometimes glandular-hispid. *Stamens* usually 5, sometimes fewer, equal or unequal; staminodes 4—6, setaceous, minute or 0. *Ovary* ovoid or subglobose, 1-chambered, sometimes glandular, with a single ovule on a basal funicle; style very short and 2-fid or styles 2. *Fruit* an ovoid membranous utricle, enclosed in the perianth. *Seed* lenticular, shining; embryo annular, surrounding the endosperm.

Annual or perennial herbs, sometimes prostrate; leaves opposite, alternate or fascicled; stipules small, scarious, entire or ciliate; flowers crowded in the leaf axils; bracts and bracteoles small.

Species about 20, natives of central and southern Europe, N.W. India, and Africa; a single species recorded from South Africa, widely distributed. (Type: *H. glabra* Linn.)

2483 13. SCLERANTHUS Linn., Sp. Pl., ed. 1, p. 406 (1753)

Perianth herbaceous when young, becoming crustaceous with age; tube campanulate; lobes usually 5. *Stamens* 1—10, often 5, inserted in the throat of the perianth-tube; filaments subulate; staminodes 0. *Ovary* ovoid, 1-chambered, with a single ovule on a basal funicle; styles 2, distinct, filiform, erect. *Fruit* a membranous utricle, included in the hardened perianth-tube. *Seed* lenticular; embryo annular, surrounding the endosperm.

Low rigid annual or perennial dichotomously branched herbs; leaves opposite, subulate, pungent, connate at the base; stipules 0; flowers in axillary and terminal sessile or pedunculate clusters; bracts 0.

A cosmopolitan genus of about 10 species found in the Old World; 1 species in South Africa recorded from the southern coastal belt, the eastern part of the central region, and the Transvaal. (Type: *S. annuus* Linn.)

2488 14. AGROSTEMMA Linn., Sp. Pl., ed. 1, p. 435 (1753)

Calyx coriaceous; tube narrowly campanulate, ribbed, villous; lobes foliaceous, linear, longer than the petals. *Petals* 5, with a narrow claw, entire, without scales at the base. *Stamens* 10; the 5 opposite the petals sometimes adnate to the claw. *Disc* basin-shaped, lobed on the margin. *Ovary* 1-chambered (sometimes 3-chambered below the middle), with many ovules on a free-central placenta; styles 5, long, linear, hairy. *Fruit* a capsule, 6- (rarely 3-) valved. *Seed* brown, somewhat wedge-shaped, with a hard testa, tuberculate; embryo annular or $\frac{1}{2}$ -annular.

Annual or perennial often hairy herbs, with radical and cauline leaves; radical leaves spatulate; cauline leaves opposite, usually linear; flowers usually terminal and solitary.

Species 2—3, natives of the Mediterranean region and widely dispersed; 1 species found in South Africa as a weed. (Type: *A. githago* Linn.)

2490

15. *SILENE* Linn., Sp. Pl., ed. 1, p. 416 (1753)

Calyx-tube tubular or turbinate, somewhat inflated, 10-ribbed, often glandular; lobes 5, much shorter than the tube. *Petals* 5, inserted on the edge of the disc, with a long narrow claw and an entire or divided limb, often with 2 scales at the base. *Stamens* 10, inserted on the edge of the disc; the 5 opposite the petals sometimes adnate to the claw. *Disc* columnar, often hairy. *Ovary* on a long gynophore which is adnate and fused to the columnar disc, usually 1-chambered, sometimes 3-chambered below the middle, with many ovules on a free-central placenta; styles 3, rarely 2—5, linear, as long as or longer than the ovary, often glandular. *Fruit* a capsule, opening by a terminal cap and then split into 6, rarely 3, valves. *Seed* with a reticulated or tubercled testa, sometimes with 2 marginal wings; embryo annular or $\frac{1}{2}$ -annular.

Annual or perennial erect tufted decumbent or diffuse-scandent herbs; leaves opposite; inflorescence variously cymose, with cymes arranged in panicles, sometimes flowers solitary.

Species about 400, natives of Europe, Asia, Africa, and America; about 12 species recorded from South Africa, widely distributed. (Type: *S. gallica* Linn.)

NOTE.—The genus *Melandrium* Roehl., *Deutschl. Fl.*, p. 274 (1796), which is closely related to *Silene*, is recorded from the Cape Peninsula (see *Flora of the Cape Peninsula*, by Adamson and Salter, p. 399).—E. P. P.

2501

16. *VACCARIA* Medik., Phil. Bot., vol. 1, p. 96 (1789)

Calyx-tube somewhat inflated, 5-winged; lobes 5, much shorter than the tube. *Petals* 5, long-clawed, exceeding the calyx, with the blade entire, without appendages. *Stamens* 10; those opposite the petals adnate to the claw; filaments slender; anthers oblong. *Ovary* 1-chambered, with many ovules on a free-central placenta; styles 2, linear, several times as long as the ovary, glandular. *Fruit* a capsule, enclosed in the persistent calyx, opening by 4 valves. *Seed* black, subglobose, minutely tuberculate; embryo slightly curved.

Annual herbs, dichotomously branched; leaves opposite, glaucous, entire, clasping at the base; inflorescence a dichotomous cyme.

Species 4; natives of western Asia and Europe; 1 species found in the Transvaal as a weed. (Type: *V. pyramidata* Medik.)

2502

17. *DIANTHUS* Linn., Sp. Pl., ed. 1, p. 409 (1753)

Calyx sessile, surrounded at the base by 2 to several bracts; tube elongated, firm, finely and equally striate; teeth 5. *Petals* 5, long-clawed, exceeding the calyx; lamina entire, many-toothed or -fid, without appendages. *Stamens* 10; filaments long, slender; anthers oblong. *Ovary* 1-chambered, membranous, with a chartaceous cap, many-ovuled; styles 2, linear, longer than the ovary. *Fruit* a cylindric, rarely an ovoid, capsule, opening by 4 valves. *Seed* orbicular or ovate in outline, flattened; embryo straight.

Herbs, often perennial, sometimes almost woody; leaves opposite, narrow, commonly grass-like; inflorescence a panicle of cymes or flowers terminal and solitary or glomerate.

Species about 300, but probably not all of them specifically distinct; 17 species described from South Africa, widely distributed. (Type: *D. caryophyllus* Linn.)

59. NYMPHAEACEAE

Flowers bisexual. *Sepals* 4—6, free or adnate to the torus. *Petals* many, sometimes gradually passing into the stamens. *Stamens* many, free or some-

times connate at the base; anthers opening inwards by longitudinal slits. *Gynaecium* of 8 to many free carpels or the carpels united below into a many-chambered ovary; carpels with 1 to many ovules which are apical or attached to the wall of the carpels; stigmas as many as the carpels, peltate or decurrent. *Fruit* formed of connate carpels or of separate carpels or of the enlarged turbinate flat-topped disc with the nut-like carpels sunk in its crown. *Seed* with or without an aril; embryo enclosed in the enlarged embryo-sac; endosperm floury or 0.

Aquatic perennial herbs with submerged rhizomes; leaves usually floating, often peltate or cordate, with the margins involute in vernalion; flowers usually floating, solitary on naked usually long scapes, large and showy, often sweet-scented; floral-whorls all free, hypogynous or adnate to a fleshy disc that surrounds or envelopes the carpels.

Genera 8, with about 35 species, very widely spread.

2513 NYMPHAEA Linn., Sp. Pl., ed. 1, p. 510 (1753) partim.

Sepals 4, adnate to the base of the disc. *Petals* in many rows; the inner successively passing into the stamens; all adnate to the disc; filaments petaloid; anthers small, linear. *Ovaries* many, in 1 series, sunk in the fleshy disc and with it forming a many-chambered false ovary crowned by the connate radiating furrowed stigmas; ovules many. *Fruit* a spongy berry. *Seed* minute, buried in pulp, enclosed in a scale-like fleshy aril.

Large aquatic herbs, with submerged creeping rootstocks; leaves floating, peltate; flowers large, solitary on a long scape, floating.

Described species about 56, found throughout the world; 6 species recorded from South Africa, widely distributed. (Type: *N. alba* L.)

60. CERATOPHYLLACEAE

Plants monoecious. *Perianth* herbaceous or submembranous, equal or unequal; segments 6—12, irregularly toothed at the apex. *Male flowers*:—*Stamens* 10—20, crowded on a flat or convex torus; filaments very short; anthers linear-oblong or oblong, opening by longitudinal slits; the connective produced beyond the thecae into a thick coloured usually 2- or 3-toothed appendage or a small brown point; thecae sometimes tipped with a small spine. *Female flowers*:—*Staminodes* 0. *Ovary* superior, sessile, ovoid, 1-chambered, with a solitary pendulous ovule; style terminal, persistent stigma unilateral. *Fruit* leathery, indehiscent, ovoid or ellipsoid, tipped with the hardened style, sometimes with 2—4 spreading or reflexed spines at the base, wingless or surrounded by a narrow or broad leathery toothed wing, smooth or tuberculate. *Seed* with a thin coat; endosperm 0.

Submerged aquatic herbs, with elongated leafy floating branches; leaves verticillate, 2-fid or dichotomously divided; segments linear or filiform, somewhat rigid, usually toothed; flowers axillary, solitary, very small, sessile, with the male and female alternating at the nodes, or the males at the lower nodes and the female at the upper nodes.

Genus 1, with a few species (perhaps only one) found growing in fresh water in nearly all parts of the world.

2516 CERATOPHYLLUM Linn., Sp. Pl., ed. 1, p. 992 (1753)

Characters and distribution of the family. In South Africa recorded from Ngamiland, the Transvaal, Natal, and the George district of the Cape Province. (Type: *C. demersum* Linn.)

61. RANUNCULACEAE

Flowers regular or zygomorphic, bisexual or more rarely unisexual. *Sepals* 3 to many, often 5, hypogynous, free, commonly petaloid and deciduous, imbricate or valvate. *Petals* equalling the number of sepals or many, sometimes absent, usually with a nectariferous claw. *Stamens* usually numerous, sometimes several or few, hypogynous, free; anthers 2-theous. *Carpels* usually many, rarely few or solitary, free or partly connate; ovules anatropous, numerous or solitary; stigmas often sessile. *Fruit* a bunch of follicles, rarely baccate, or of dry achenes often tipped with the persistent styles. *Seed* without an aril; embryo small; endosperm copious.

Terrestrial perennial, rarely annual, herbs, rarely aquatic, sometimes scandent; leaves radical or alternate, rarely opposite, entire or variously divided; stipules absent or very rudimentary; flowers solitary or arranged in racemes or panicles.

Genera 48, with close on 2,000 species, distributed over all parts of the world.

- | | | |
|--|------------------------------|---|
| 1. A diminutive herb 2—3 cm. high, with linear basal leaves | | |
| | 5. <i>Myosurus</i> Linn. | |
| Not diminutive herbs | | 2 |
| 2. Leaves opposite | | 3 |
| Leaves alternate, often radical | | 4 |
| 3. Sepals valvate | 3. <i>Clematis</i> Dill. | |
| Sepals half imbricate and half induplicate-valvate or wholly imbricate | 4. <i>Clematopsis</i> Bojer | |
| 4. Flowering scape with an involucre of leaves remote from the calyx | 1. <i>Anemone</i> Linn. | |
| Flowering scape or inflorescence without an involucre of leaves | | 5 |
| 5. Petals absent | 7. <i>Thalictrum</i> Linn. | |
| Petals present | | 6 |
| 6. Petals without a nectary; achenes fleshy or pulpy | 2. <i>Knowltonia</i> Salisb. | |
| Petals with a nectary; achenes dry | 6. <i>Ranunculus</i> Linn. | |

2541

1. ANEMONE Linn., Sp. Pl., ed. 1, p. 532 (1753)

Sepals 4—20, coloured, imbricate, deciduous. *Petals* 0. *Stamens* many, shorter than the sepals; filaments often linear, longer than the anthers. *Carpels* many, each with a single pendulous ovule, often villous. *Fruits* a bunch of dry achenes, nude, acuminate, tailed with the persistent styles or tails absent.

Perennial herbs; leaves alternate, radical, much dissected or lobed, sometimes villous; flowers terminal on a radical scape which is sometimes villous, subtended by an involucre of leaves remote from the calyx.

Species over 200, cosmopolitan; 5—6 species in South Africa, extending from the Transvaal, Natal, and Basutoland, through the eastern districts to the Cape. (Type: *A. nemorosa* Linn.)

2541a

2. KNOWLTONIA Salisb., Prodr., p. 372 (1796)

Sepals 5, herbaceous, deciduous. *Petals* 5—16, conspicuous, without a nectary. *Stamens* many; filaments usually flat and linear. *Carpels* many, with one pendulous ovule in each. *Fruit* a bunch of achenes, fleshy or pulpy.

Perennial acaulescent herbs, with the habit of some species of *Umbelliferae*; leaves radical, ternately compound; leaflets usually toothed, sometimes large,

variously shaped but rarely linear, rarely dissected; cauline leaves 0 or reduced to bracts; flowers often arranged in irregular umbels.

Endemic; species 10, extending from the northern Transvaal and Natal, through the eastern districts to the Cape. (Type: *K. rigida* Salisb.)

2542 3. CLEMATIS Linn., Sp. Pl., ed. 1, p. 543 (1753)

Sepals 4 (rarely 5—8), petaloid, valvate, sometimes with the swelling at the base outside, often with villous edges. *Petals* 0 or shorter than the sepals and represented by outer staminodes. *Stamens* many; filaments usually flat and linear. *Carpels* many, each with a single pendulous ovule; style long villous. *Fruit* a bunch of dry achenes; achenes sessile or scarcely stalked with hairy or feathery tails.

Stems woody, scandent, rarely undershrubs or herbaceous; leaves opposite, tripinnate and with many leaflets, or rarely simple; petiole often twining; flowers axillary or terminal, solitary or inflorescence a panicle; bracteoles usually absent, rarely 2.

Species over 250, mostly in the temperate regions, rare in the tropics; 5 species occur in South Africa, widely distributed. (Type: *C. vitalba* Linn.)

2542a 4. CLEMATOPSIS Bojer, ex Hook. Ic. Pl., vol. 1, t. 10 (1837)

Characters of *Clematis* except that the sepals are half imbricate and half induplicate-valvate or wholly imbricate. The leaves are sometimes alternate in cultivation.

Species 16, natives of Africa and Madagascar; 1 species found in the Transvaal. (Type: *C. suaveolens* Boj.)

2543 5. MYOSURUS Linn., Sp. Pl., ed. 1, p. 284 (1753)

Sepals 5, rarely 6 or 7, long-spurred or with short and blunt spurs at the base. *Petals* 5, rarely 6 or 7 or wanting, narrow with a nectariferous pit at the summit of each claw. *Stamens* 5—25, about equalling the sepals. *Carpels* numerous, borne on a central axis which becomes greatly elongated in the fruit. *Achenes* apiculate or aristate.

Diminutive acaulescent annual herbs; leaves basal, linear, entire; inflorescence simple, 1-flowered.

Species about 19, found in Europe, North and South America, Australia, and New Zealand; 1 species recorded from the Worcester district of the Cape Province. (Type: *M. minimus* Linn.)

2546 6. RANUNCULUS Linn., Sp. Pl., ed. 1, p. 584 (1753)

Sepals 3—5, deciduous or caducous. *Petals* as many or more than the number of sepals. *Stamens* many, rarely few, shorter than the sepals and petals; filaments linear. *Carpels* many, in several series, with a single ascending ovule in each; stigmas often sessile. *Fruit* a bunch of dry achenes, sometimes apiculate with the very short styles or rostrate, smooth, striate, ribbed, rugose, or spiny.

Annual, sometimes perennial, herbs, usually found in damp places, sometimes aquatic; sometimes creeping and rooting at the nodes, often hairy; leaves alternate, often radical, entire or palmately or pinnately compound or cut, sometimes pinnatisect, sometimes cordate or peltate; flowers usually solitary, rarely sessile in the axils of the branches or inflorescence sometimes a panicle.

Species about 380, cosmopolitan; about 6 species found in South Africa but not all native, widely distributed but not well represented in the central districts. (Type: *R. acris* Linn.)

2548 7. THALICTRUM Linn., Sp. Pl., ed. 1, p. 545 (1753)

Sepals 4—5, petaloid. *Petals* 0. *Stamens* many, several, or few, shorter than the sepals; anthers sometimes apiculate. *Carpels* many, few, or sometimes solitary, with a single pendulous ovule in each; style deciduous or 0, sometimes persistent. *Fruit* a bunch of dry achenes, often shortly stalked, sometimes fruit solitary or of 2 achenes on long filiform peduncles.

Perennial herbs; leaves alternate, ternately divided, cauline leaves sometimes present; inflorescence a panicle or rarely a raceme.

Species about 130, found in both hemispheres except Australia, New Zealand, and extra-tropical South America; 3 or 4 species in South Africa recorded from the Transvaal, Basutoland, Natal, the Orange Free State, and the eastern districts; a record also from the Kimberley, Somerset East, and Graaff-Reinet districts. (Type: *T. aquilegifolium* Linn.)

62. MENISPERMACEAE

Plants dioecious. *Sepals* varying in number, often in 3 whorls, sometimes in 3 or 4 whorls, rarely reduced to 1, free or rarely joined, imbricate or rarely valvate, often the outer smaller than the inner. *Petals* various, often in 2 trimerous whorls, rarely in 2 whorls, rarely petals only 1 or 0, free or rarely joined, imbricate or valvate. *Stamens* many or equalling the number of petals and opposite to them, often 6, rarely 3, free or variously connate; anthers variously dehiscent, sometimes situated on the margin of a peltate disc. *Staminodes* in female flowers various, sometimes absent. *Carpels* free, rarely many, sometimes 6, very often 3 or only 1, inserted on a short torus, rarely on a long gynophore; in the male flowers mostly absent, rarely rudimentary; style terminal or subterminal, often recurved; stigma entire, lobed or cut; ovules often 2, generally 1 in each ovary. *Fruit* a number of free drupes; drupes sessile or stalked, straight or curved; endocarp often bony and rugose or tuberculate or ribbed. *Seed* often curved in the form of a horseshoe, with uniform or ruminate endosperm or endosperm 0; embryo often curved, with a small radicle and flat or semi-terete cotyledons.

Usually woody climbers or scandent, sometimes with tendrils, rarely herbaceous or erect shrubs or small trees; leaves alternate, simple, sometimes peltate, rarely trifoliate, penninerved or palmatinerved; stipules 0; inflorescence a cyme, panicle or more rarely the flowers fasciculate or solitary; flowers usually small, green, white, or yellow, very rarely deeply coloured.

Genera 63; species 357, found in all tropical countries.

- | | | | | | |
|--|-----|-----|-----------------------------|--------------------------------|---|
| 1. Carpel 1; anthers on the margin of a flat disc | ... | ... | ... | ... | 2 |
| Carpels 3; anthers not as above | ... | ... | ... | ... | 4 |
| 2. Petals in male flowers free | ... | ... | 2. <i>Stephania</i> Lour. | | |
| Petals in male flowers forming a cup or disc; in female flowers 2 or 1 | ... | ... | | ... | 3 |
| 3. Sepals and petals in female flowers 2 | | | 3. <i>Antizoma</i> Miers | | |
| Sepals and petals in female flowers 1 | | | 4. <i>Cissampelos</i> Linn. | | |
| 4. Stamens free | ... | ... | ... | 1. <i>Cocculus</i> DC. | |
| Stamens connate at the base or above the middle | | | | 5. <i>Hyalosepalum</i> Troupin | |

2570 1. COCCULUS DC., Syst., vol. 1, p. 515 (1818)

Sepals 6, often pilose, with the 3 outer much smaller than the 3 inner. *Petals* 6, concave or involute round the stamens, entire or bifid. *Male flowers*:—

Stamens 6—9; anthers with transverse dehiscence. *Female flowers*:—*Staminodes* 6, filamentous or staminodes absent. *Carpels* 6—3, semi-ovoid, with a solitary ovule in each; style cylindric, erect or recurved or stigmas sessile and recurved. *Drupe*s obovate or round and compressed, bearing the persistent style or stigma; endocarp curved with a median septum, ribbed, keeled on the periphery. *Seed* curved; cotyledons linear, flat; endosperm scanty.

Scandent shrubs, rarely prostrate or erect; stems sometimes fleshy; leaves sometimes cordate, rarely subpeltate, sometimes falling before the flowers appear, mostly pilose beneath; cymes 1—2-nate in the axils of leaves or bracts or axillary on leafless branches, rarely flowers solitary in the female plants.

Species 11, natives of North America, Africa, temperate and tropical Asia, India, and Australia; 1 species in South Africa recorded from the northern Transvaal, Natal, and Bechuanaland. (Type: *C. villosus* (Lam.) DC.=*C. hirsutus* L. Diels)

2572 2. STEPHANIA Loui., Fl. Cochinch., p. 608 (1790)

(*Homocnemis* Miers)

Male flowers:—*Sepals* 6—8, mostly subequal, rarely unequal, concave, obovate. *Petals* 3—4, similar to the sepals, rarely absent. *Stamens* united into a column bearing a flat disc, with the sessile anthers confluent into a single ring round the margin. *Female flowers*:—Similar to those of the male but *sepals* 3—6 and *petals* 2—4. *Carpel* 1; style absent or almost so; stigma very shortly lobed or divided into 3—6 spreading lobes. *Fruit* a drupe, compressed; endocarp horseshoe-shaped with an open cavity on each side. *Seed* curved; embryo conforming to the shape of the seed; endosperm scanty.

Scandent shrubs, rarely herbs; leaves peltate, with a variously shaped lamina; inflorescence mostly a simple or compound pseudo-umbel, rarely a panicle, with the ultimate cymes often many-flowered.

Species over 30, natives of Africa, Asia, and Australia; 2 species occur in South Africa, extending from the northern Transvaal into Basutoland and Natal and as far south as the Port Elizabeth district. (Type: *S. rotunda* Lour.)

2573 3. ANTIZOMA Miers, Ann. & Mag. Nat. Hist., series 2, vol. 7, p. 41 (1851)

Male flowers:—*Sepals* 4, cuneate-obovate, sometimes white woolly. *Petals* 4, connate into a shallow saucer-shaped corolla. *Stamens* connate into a column, expanded and peltate above; anthers 4—10, sessile in a marginal ring on the disc of the staminal column. *Female flowers*:—*Sepals* 2, opposite. *Petals* 2, opposite the sepals. *Carpel* 1; style 0; stigma lobed. *Fruit* a drupe, sometimes curved when mature so that the apex with the stigma points downwards; endocarp on either side with somewhat conspicuous warty ridges. *Embryo* bent; cotyledons flat; endosperm copious.

Shrubs, sometimes scandent, often prostrate or suberect; leaves usually oblong or linear, more rarely ovate or reniform, often armed at the base with a dorsal spur-like spur; male inflorescence in cymes; female flowers solitary or 2-nate.

Endemic; species 5, found in the Transvaal, South West Africa, Namaqualand, Bechuanaland, the north-western districts, the Orange Free State, and into the south-western districts.

NOTE.—I have not seen sufficient material of female plants to decide if this genus should be kept distinct from *Cissampelos*. For the time being those plants with 2 sepals and 2 petals are placed in *Antizoma* and plants with 1 sepal and 1 petal in *Cissampelos*.—E. P. P.

2574 4. CISSAMPELOS Linn., Sp. Pl., ed. 1, p. 1031 (1753)

Male flowers:—*Sepals* 4, rarely 5, mostly dorsally pilose. *Petals* connate into a cup or saucer-shaped corolla. *Stamens* often 4—6, connate into a column, expanded and peltate above; anthers sessile in a marginal ring on the disc of the staminal column. *Female flowers*:—*Sepals* 1, obovate, dorsally pilose. *Petal* 1, opposite the sepal. *Sepals* and *petals* often deciduous leaving the gynaeceum bare. *Carpel* 1, more or less villous; style 3-fid. *Fruit* a drupe, often pilose, bent so that the apex with the stigma points downwards; endocarp often warty.

Scandent bushes, rarely erect shrubs; leaves ovate, cordate, or suborbicular, sometimes peltate; male inflorescence a number of cymes arranged in a paniculate manner; female flowers grouped in the axils of reduced leaves and the whole inflorescence giving the appearance of a spike.

Species about 20, natives of Africa, tropical Asia, and America; 2 or 3 species occur in South Africa, extending from the Transvaal and Natal, through the coastal districts to Van Rhynsdorp; also recorded from the Queenstown district. (Type: *C. pareira* Linn.)

2591 5. HYALOSEPALUM Troupin, in Bull. du Jardin Bot. de l'État Brux., vol. 19, p. 430 (1949)

(*Desmonema* Miers)

Male flowers:—*Sepals* 6; the outer 3 much smaller than the inner. *Petals* 6; the 3 inner shorter than the outer which are slightly shorter than the inner sepals. *Stamens* 6 or 3; filaments connate to about the middle; anthers erect, dehiscing by a longitudinal slit. *Female flowers*:—*Sepals* and *petals* similar to those in the male. *Staminodes* (6) sometimes present and opposite the petals. *Carpels* 3; ovary obliquely ovoid; stigma sessile, oblique. *Drupe*s bright orange red (always?), 3 or fewer; unequally ovoid; endocarp with 5—6 teeth and with a deep cavity on the ventral side.

Scandent shrubs, with the stems sometimes easily broken into joints; leaves entire, often cordate at the base, palmately 5—7-nerved; male inflorescence a slender elongated pseudo-raceme, with the flowers fascicled; bracts acuminate.

Species 8, natives of Africa and Madagascar; 1 species recorded from the northern Transvaal and one from Natal. (Type: *H. caffrum* (Miers) Troupin)

63. ANNONACEAE

Flowers bisexual, more rarely unisexual. *Sepals* 3, usually valvate, free or connate. *Petals* hypogynous, often 6 in 2 series, rarely 4 or 3, imbricate or valvate in each series. *Torus* usually well developed, flat, convex, or sub-conical. *Stamens* hypogynous, usually many or indefinite, rarely few, usually oblong, linear, or cuneate; thecae sometimes remote from each other; connective usually produced into a variously shaped appendage, often truncate at the apex. *Carpels* numerous or few, rarely 1, with 1 to many ovules in each ovary; styles short or 0; stigma various. *Fruit* of 1 to many sessile or stalked separate fruits (carpels), 1- to many-seeded, usually fleshy, rarely dehiscent, more rarely the carpels fusing with the torus to form a fleshy false-fruit (a syncarp). *Seed* often arillate; embryo minute; endosperm copious and markedly ruminant, or endosperm consisting of hard waxy plates separated by a membranous outgrowth from the endocarp.

Trees or shrubs or lianes; leaves alternate, simple, entire; flowers solitary or in fascicles.

Genera about 95, with over 1,000 species and almost entirely confined to the tropics.

1. Carpels fused with the torus to form a false fruit (syncarpium)

6. *Annona* Linn.

Carpels free in the fruit 2

2. Ovules many or few in each ovary 3

Ovules 1—2 in each ovary 5

3. Petals long-acuminate from an ovate base, forming a straight or curved beak in the bud 4. *Xylopia* Linn.

Petals not forming a distinct beak in the bud 4

4. Stigmas truncate, with the margin rolled inwards all round

1. *Uvaria* Linn.

Stigma 2-lobed, with the lobes oblong or dilated

3. *Hexalobus* A.DC.

5. Flowers fascicled on a flattened recurved woody peduncle

5. *Artabotrys* R. Br.

Flowers not on a recurved woody peduncle 2. *Popowia* Linn.

2673

1. *UVARIA* Linn., Sp. Pl., ed. 1, p. 536 (1753)

Sepals 3, valvate, often connate at the base, sometimes with stellate hairs. *Petals* 6, imbricate, in 2 rows, sometimes connate at the base; the inner somewhat smaller than the outer and without glands at the base. *Stamens* indefinite, inserted on the torus, sometimes forming a dense subglobose head which surrounds the carpels; anther-thecae linear, with the connective expanded into a truncate appendage. *Torus* flat or depressed, pubescent, often densely tomentose between the ovaries. *Carpels* free, indefinite, linear-oblong in outline, sometimes angular and furrowed; ovary with many ovules in 2 (rarely 1) rows; style short and thick; stigmas truncate, irregularly lobed, with involute margins, sometimes tomentose. *Fruit* a berry, sometimes yellow when ripe, more or less oblique, few- or many-seeded. *Seeds* ovate, brown and shining.

Climbing or trailing shrubs, with stellate pubescence; flowers terminal, opposite the leaves or rarely axillary, solitary or arranged in a cyme.

Species about 140, natives of tropical Asia and Australia and a few African; 1 species recorded from Natal. (Type: *U. zeylanica* Linn.)

2691

2. *POPOWIA* Endl., Gen., vol. 2, p. 831 (1839)

(*Guatteria caffra* Sond. of the Fl. Cap.)

Flowers bisexual or occasionally unisexual. *Sepals* 3, ovate or transversely oblong, valvate, often forming a shallow basin. *Petals* 6, mostly leathery, valvate, in 2 series, ovate or orbicular; the outer usually larger than the inner. *Stamens* indefinite or definite, short, cuneate or oblong in outline, truncate, with the anther-thecae remote. *Carpels* several, ovoid or ellipsoid, with 1—2 ovules in each ovary, rarely with 1 basal ovule; style straight or curved; stigma truncate. *Fruits* clustered, stalked, berry-like, globose or ovoid or oblong in outline and constricted in the middle. *Seed* conforming to shape of the fruit; endocarp producing membranous outgrowths which grow between the plates of the endosperm; endosperm of waxy plates, whitish or (in a South African species) covered with small reddish glands; embryo small.

Trees or shrubs; flowers usually subglobose, hardly opening, extra-axillary or opposite the leaves, nearly sessile, tomentose.

Species about 60, natives of the Old World tropics; 2 species described from South Africa, extending from Natal to the East London district.

2716 3. HEXALOBUS A. DC., Mem. Soc. Phys. Génév., vol. 5, p. 212 (1832)

Sepals 3, coriaceous, ovate, valvate, often tomentose. *Petals* 6, in 2 rows, connate at the base into a small tube, free above, subequal, valvate, transversely folded at least in bud. *Torus* more or less convex or truncate. *Stamens* indefinite; anthers linear or linear-cuneate, with the connective thickened and truncate above the thecae. *Carpels* many (2—3 in the South African species and villous); ovaries with numerous ovules in 1 row; stigma 2-lobed, with the lobes oblong or dilated. *Fruit* of as many separate parts as there were carpels; each portion fleshy, large, subglobose, sometimes with a constriction. *Endosperm* of some fleshy plates covered with glands.

Trees or shrubs, glabrous or pubescent; leaves lanceolate or oblong-lanceolate, sometimes very large and shortly acuminate, penninerved; flowers axillary, solitary or fascicled, sessile or pedicelled.

Species 7, natives of Africa and Madagascar; 1 species found in the northern Transvaal. (Type: *H. madagascariensis* A.DC.)

2717 4. XYLOPIA Linn., Syst., ed. 10, p. 1250 (1759)

Sepals 3, more or less connate, valvate. *Petals* 6, valvate, in 2 series, usually linear or linear-subulate, rarely oblong or ovate, sometimes with an ovate base. *Torus* nearly flat or but slightly concave (in the South African species forming a basin). *Stamens* many, inserted in the South African species on the outer wall of the torus, linear or cuneate, truncate at the apex. *Carpels* few or many, in the South African species situated on the inside of the basin-shaped torus, with few ovules in each ovary; ovaries usually strigose-hairy; style short, truncate. *Fruits* clustered, shortly stalked, oblong or narrow-linear in outline, torulose.

Trees or shrubs; leaves usually coriaceous, often elliptic or lanceolate, sometimes obovate; flowers axillary, solitary or in small fascicles (in the South African species the buds form a straight or curved beak).

Species over 170, found in Africa, Madagascar, Asia, Malaya, and America; 42 species are recorded from Africa; 1 species found in the Pietersburg and Zoutpansberg districts of the Transvaal. (Type: *X. muricata* Linn.)

2724 5. ARTABOTRYS R. Br., Bot. Reg., t. 423 (1820)

Sepals 3, valvate, tomentose at least in the South African species. *Petals* 6, valvate, in 2 series, concave and connivent at the base; limb lanceolate or subterete, generally narrow, leathery and semi-orbicular in the South African species. *Torus* subconical. *Stamens* many, oblong or cuneate; appendages short or long or none and stamens truncate; anther-thecae dorsal or lateral. *Carpels* few or many, with 2 erect ovules in each ovary; style oblong or columnar (in the South African species the stigma is fleshy and about as thick as the glabrous ovary). *Fruit* baccate, sometimes large and pear-shaped.

Climbing or trailing shrubs; leaves coriaceous, sometimes small, elliptic, sometimes very large, dark green, shining; flowers solitary or more often fascicled on flattened recurved peduncles by which the plant climbs.

Species about 60, natives of the tropics and subtropics of the Old World; 2 species found in South Africa, recorded from the northern Transvaal, Zululand, and Natal. (Type: *A. odoratissimus* R. Br.)

2729

6. ANNONA Linn., Sp. Pl., ed. 1, p. 536 (1753)

Sepals 3, valvate. *Petals* 6, valvate, in 2 series; the inner opposite the sepals, rarely absent; the outer fleshy or thick and coriaceous. *Stamens* indefinite, linear; anther-thecae parallel, opening by longitudinal slits; connective usually terminating in a swollen head or hood-like process above the anther-thecae. *Torus* convex or conical. *Carpels* many, usually free, sometimes united, usually hairy, with a single ovule in each ovary; styles and stigmas free and various in form. *False fruit* fleshy, formed by the growing together of the carpels and torus, usually ovoid, spheroid, or cordiform in shape; true fruit (at least in the South African species) subovoid, convex on 1 side, somewhat straight on the other, brown. *Endosperm* of firm waxy plates between which a membranous outgrowth from the endocarp grows.

Trees or shrubs, sometimes low straggling bushes; leaves frequently large and broadly elliptic and rounded or subcordate at the base; flowers solitary, fascicled, or rarely cymosely racemose, terminal or extra-axillary.

A tropical genus of about 65 species, mostly American; 10 species African; 1 species recorded from the Transvaal, Swaziland, and Natal. (Type: *A. muricata* Linn.)

64. MONIMIACEAE

Flowers bisexual or unisexual. *Perianth* regular or irregular, 4- or more-lobed or oblique; tube globose or none. *Disc* adnate to the perianth-tube or 0. *Stamens* numerous or few, in 1—2 series; filaments usually flat, often with a gland on each side at the base, sometimes almost 0; anthers erect, 2-thealous, with the thecae distinct or confluent at the apex, dehiscent longitudinally or by valves. *Staminodes* present or absent in the female flowers. *Carpels* distinct, usually many, sometimes only 1, with a solitary erect or pendulous ovule in each ovary; style short or elongated or 0; stigma terminal, sometimes sessile. *Fruits* of separate carpels enclosed in the perianth-tube or of 1 carpel and free from the perianth, indehiscent, often drupaceous. *Seed* erect or pendulous; testa membranous; endosperm fleshy; embryo small to $\frac{1}{2}$ as long as the endosperm.

Trees or shrubs, rarely climbers; leaves opposite or alternate, entire or toothed, with pellucid dots; stipules 0; inflorescence a raceme or cyme or the flowers fascicled; bracts small or 0.

Genera 30; species about 250, widely distributed in the warmer regions of both hemispheres.

2759a XYMALOS Baill., Bull. Soc. Linn. Paris, vol. 1, p. 650 (1887)

Plants dioecious. *Male flowers* with a 4—6-parted flattish perianth; lobes slightly joined at the base; tube 0. *Stamens* 10—15; anthers 2-thealous, almost sessile. *Ovary* 0. *Female flowers* with a 3—5-lobed perianth, similar to that of the male. *Disc* 0. *Staminodes* 0 or represented by a ring of hairs round the base of the ovary. *Ovary* obovoid or turbinate, 1-chambered, with a solitary pendulous ovule; stigma sessile, discoid or subhemispherical. *Fruit* fleshy, smooth, crowned by the persistent stigma. *Seed* compressed, ellipsoid.

Shrubs or small trees; leaves nearly opposite, shortly petioled, minutely pellucid-dotted; inflorescence a solitary raceme or racemes geminate in the axils of the leaves, hairy; bracts ovate or oblong.

An African genus of 2 species; 1 species in South Africa, extending from the northern Transvaal and Natal to the Kingwilliamstown district. (Type: *X. monospora* Baill. = *Xylosma monospora* Harv.)

65. LAURACEAE

Plants sometimes dioecious. *Flowers* sometimes bisexual, mixed with occasional unisexual flowers, regular. *Perianth* usually 6-lobed or -partite; lobes equal or more or less unequal, usually in 2 whorls; tube (receptacle) ovoid, turbinate, or campanulate, sometimes enlarging and persistent in fruit. *Stamens* typically in 3 rows; the outer row or 2 outer rows usually adnate to the perianth-lobes and the innermost row on the receptacle and consisting of anthers of different shapes and sizes or of fertile stamens alternating with staminodes; filaments various, often with sessile or stalked glands at the base of some; anthers 2—4-valved, with the operculum sometimes remaining attached to the anthers. *Ovary* superior, rarely inferior, more or less surrounded by the receptacle or ultimately quite enclosed in it, 1-chambered, with a solitary pendulous ovule; style simple; stigma terminal, sometimes 2-lobed. *Seed* often with large fleshy cotyledons; endosperm none.

Trees or shrubs, very rarely twining parasitic herbs (*Cassytha*), all parts with aromatic oil glands; leaves alternate, rarely opposite or subopposite, penninerved or digitately 3—5-nerved, very rarely reduced to small scales (*Cassytha*); stipules 0; inflorescence cymose or racemose, axillary or subterminal, rarely terminal or flowers solitary; bracts caducous or subsistent, sometimes forming involucre below the partial inflorescence; bracteoles 0 (except in *Cassytha*).

Genera about 34, with about 1,000 species found in the tropics and subtropics; few in Africa.

1. Twining parasites, with thread-like yellowish stems; leaves reduced to scales 3. *Cassytha* Linn.
Trees or shrubs with well-developed leaves 2
2. Anthers 4-valved; fruit seated on or in the enlarged cupular receptacle
1. *Ocotea* Aubl.
Anthers 2-valved; fruit completely enclosed in the persistent and accrescent receptacle 2. *Cryptocarya* R. Br.

2788 1. *OCOTEA* Aubl., Pl. Guyane, vol. 2, p. 780, t. 310 (1775)

Plants usually dioecious. *Flowers* sometimes bisexual. *Perianth* somewhat herbaceous, 6—8-lobed or -partite, with or without a receptacle or tube; lobes or segments equal, usually deciduous. *Bisexual flowers* with the stamens in 3 whorls; the first 2 whorls adnate to the perianth-lobes and with fertile anthers; the innermost whorl situated on the receptacle and consisting of fertile stamens alternating with staminodes; the filaments of the fertile stamens of the innermost whorl with a pair of large sessile glands at the base; staminodes slender. *Ovary* ovoid, ellipsoid, or subglobose, usually glabrous; style longer or shorter than the ovary; stigma sometimes 2-lobed. *Male flowers* as in the bisexual flowers, but the ovary sterile, stalk-like or quite suppressed. *Female flowers* as in the bisexual flowers, but the stamens rudimentary. *Fruit* baccate, ellipsoid or globose, seated on or in an enlarged cupular receptacle which is either truncate or 6-toothed or -lobed from the sometimes persistent perianth-tube.

Trees or shrubs; leaves alternate, membranous or coriaceous, glabrous or hairy, in the South African species at least, usually with large pits on the underside in the axils of the lowest 1—2 pair of nerves; inflorescence cymose, arranged in axillary or subterminal panicles.

Species about 200, mostly tropical American; 4 species in Africa, a few in the Mascarene Islands; 2 species in South Africa, extending from the northern Transvaal and Natal to the Swellendam district with a wide gap in the eastern districts. (Type: *O. guianensis* Aubl.)

2813

2. CRYPTOCARYA R. Br., Prodr., p. 402 (1810)

Flowers bisexual. *Perianth* somewhat herbaceous, 6-lobed; lobes in 2 whorls, subequal, deciduous. *Receptacle* ovoid to turbinate or subcylindric, constricted above after flowering. *Stamens* in 4 whorls; the 2 outer whorls fertile and inserted at the base of the perianth-lobes; the third whorl fertile and inserted on the upper part of the receptacle; the fourth whorl similar to the third but reduced to staminodes; filaments short, those of the third whorl with a pair of sessile or stipitate glands at the base or in front of it; anthers of the 2 outer whorls introrse; those of the third whorl extrorse; anthers of upper whorl after dehiscence with the operculum adhering to the thecae; staminodes ovoid and shortly stipitate or attenuate at the base. (In the South African species examined the stamens are in 3 rows; the middle row of staminodes; the lowest row of alternate stamens differing in shape; glands absent.) *Ovary* sessile, enclosed in the receptacle; style cylindric, shortly exserted or included; stigma terminal. *Fruit* globose or oblong in outline, enclosed in the enlarged hardened or somewhat fleshy receptacle, smooth or longitudinally ribbed. *Seed* with large fleshy cotyledons; endosperm 0.

Trees or shrubs; leaves alternate, rarely subopposite, usually elliptic, sometimes linear, sometimes acuminate, sometimes very large, penninerved or digitately 3-nerved; inflorescence a subterminal or axillary panicle, rarely flowers solitary.

A tropical genus of over 40 species, mostly natives of the Indo-Malayan region; a few in Australia; 6 species in South Africa, extending from the northern Transvaal, through Natal and the coastal belt to the Van Rhynsdorp district. The distribution is not, however, continuous. (Type: *C. glaucescens* R. Br.)

2825

3. CASSYTHA Linn., Sp. Pl., ed. 1, p. 35 (1753)

Flowers bisexual, sometimes dimorphic. *Perianth* 6-partite; segments unequal, the 3 outer much smaller than the 3 inner. *Receptacle* turbinate or ovoid, tightly constricted above after flowering. *Stamens* 12, in 3 whorls; the outermost whorl adnate to the 3 inner perianth-segments; the middle whorl with 2 large sessile glands at the base of the filament in front; the innermost of 6 stamens of 2 different shapes and sizes; filaments often broad and sometimes with large air-cells; each anther-theca opening by an operculum which remains attached for some time to the anther. *Ovary* during flowering hardly immersed in the receptacle which afterwards grows out and envelops it; ovule 1, pendulous; style cylindric; stigma terminal. *Fruit* completely enclosed in the succulent receptacle, often crowned with the persistent perianth-limb; endocarp bony. *Seed* with large cotyledons; endosperm 0.

Twining parasitic herbs with string-like yellowish stems, adhering to their hosts by uniseriate haustoria; leaves reduced to minute scales; inflorescence a raceme, spike, or head; flowers small, sessile or pedicelled from the axils of scale-like bracts, supported by a pair of bracteoles.

Species about 16, mostly Australian; 3 species in South Africa, extending through the coastal belt from Natal to the Cape. (Type: *C. filiformis* Linn.)

66. HERNANDIACEAE

Plants sometimes dioecious. *Flowers* sometimes bisexual or unisexual, or bisexual with occasional unisexual flowers. *Perianth-lobes* 4–10, usually in 2 whorls, valvate or imbricate. *Stamens* 3–5, often 4, opposite the outer perianth-segments when perianth in 2 whorls, alternating with staminodes or staminodes absent; anthers 2-thecous, opening introrsely or by 2 valves.

Ovary inferior, 1-chambered, with a solitary pendulous ovule; style and stigma simple or style 0 and stigma sessile. *Fruit* dry, more or less ribbed, either with 2—4 wings on the body or with 2 terminal wings formed by the enlarged perianth-segments or wingless but enclosed in the inflated receptacle. *Seed* with a leathery testa; embryo straight; cotyledons large, plano-convex or flat; endosperm 0.

Trees or shrubs, sometimes scandent; leaves alternate, simple or digitately compound; stipules absent; inflorescence usually a cyme arranged in racemes or panicles.

Genera 4; species about 21, natives of America, Africa, India, and the Malay Archipelago.

2830 1. GYROCARPUS Jacq., *Select. Stirp. Amer. Hist.*, p. 282, t. 178 (1763)

Flowers unisexual. *Male flowers*:—*Perianth* 4—8-partite; lobes equal or unequal, linear or oblong-spathulate, obtuse. *Stamens* 4—7, alternating with staminodes; anthers broadly oblong, opening by valves. *Ovary* 0. *Female* or *bisexual flowers*:—*Perianth-tube* ovoid; lobes of limb 2, oblong, obtuse, persistent, enlarging in fruit. *Stamens* 0. *Ovary* inferior, 1-chambered, with a solitary pendulous ovule; style 0; stigma sessile between the lobes of the perianth. *Fruit* a bony nut, produced into 2 wings. *Seed* broadly oblong.

Tall tree, with the branches leafy at the apex; leaves alternate, long-petioled, entire or lobed, dark green above, whitish tomentose beneath; inflorescence a dense racemose cyme; flowers small, hairy; male flowers very numerous; female flowers solitary or few in each cyme; bracts 0.

Species 1, found in all tropical countries; recorded from South West Africa. (Type: *G. americanus* Jacq.)

67. PAPAVERACEAE

Flowers bisexual, regular. *Sepals* usually 2, rarely 3, free, deciduous. *Petals* 4—6, more rarely 8—12, spreading, imbricate, often crumpled. *Stamens* hypogynous, numerous, free, adhering in parcels to the base of the petals; filaments linear; anthers 2-theous, basifixed, erect, opening lengthwise. *Ovary* superior, 1-chambered, with numerous ovules on parietal placentas; style short or none; stigmas often sessile, as many as the placentas, radiating. *Fruit* a dry capsule, opening by valves or pores. *Seeds* small with a crested or smooth raphe or arillate; testa often sculptured; embryo minute, in copious fleshy or oily endosperm.

Annual or perennial herbs with coloured juice, rarely shrubs or small trees; leaves alternate, simple or multifid, sometimes spiny; stipules 0; flowers usually solitary on long peduncles, white, red, or yellow; buds erect or nodding.

Genera 23, with over 100 species, chiefly natives of the northern hemisphere; common throughout the temperate zone.

Flower-buds erect; capsule opening by slits **1. Argemone** Linn.

Flower-buds drooping; capsule opening by pores beneath the stigma
2. Papaver Linn.

2852 1. ARGEMONE Linn., *Sp. Pl.*, ed. 1, p. 508 (1753)

Sepals 2—3, hooded or horned, soon deciduous. *Petals* 4—6, large, obovate. *Stamens* numerous; filaments linear. *Ovary* with 4—6 nerviform placentas with numerous ovules on each; stigma sessile, depressed, with the lobes

2858a 1. PHACOCAPNOS Bernh., *Linnaea*, vol. 12, p. 664 (1838)

(Corydalis DC. of the Fl. Cap.)

Sepals 2, scale-like, deciduous. *Petals* 4, with 3 sometimes united at the base and the fourth free; posterior petal spurred; tube when present shortly campanulate. *Stamens* in 2 groups of 3 each; each group with the filaments fused into a long or short, or almost none, slender linear portion and bearing at the apex the anthers on very short free portions of the fused filaments. *Ovary* sometimes shortly and bluntly stalked, elliptic or oblong in outline and with 2 narrow keels, 1-chambered, with several ovules; style linear; stigma somewhat capitate, sometimes with 2 short lobes. *Fruit* a membranous capsule. *Seed* lenticular, with a black shining testa.

Herbaceous climbing annuals; leaves much cut, furnished with tendrils; inflorescence a short raceme.

Endemic; species 3, extending from the Van Rhynsdorp and Clanwilliam districts to Natal.

NOTE.—Prantl and Kündig (*Pflanzenfam.*, vol. 3 (2), p. 144) placed the genus under *Corydalis* DC. in the family *Papaveraceae*, though Adamson and Salter (*Flora of the Cape Peninsula*, p. 406) retain the genus.—E. P. P.

2858b 2. CYSTICAPNOS Adans., *Fam.*, vol. 2, p. 431 (1763)

Characters similar to those of *Phacocapnos* Bernh. but fruits bladdery. (There may not be very good grounds for keeping this genus distinct from *Phacocapnos*.)

Endemic; species 1, extending from Namaqualand to the Cape. (Type: *C. africana* Gaert.)

NOTE.—Prantl and Kündig (*Pflanzenfam.*, vol. 3 (2), p. 144) place the genus under *Corydalis* DC. in the family *Papaveraceae*.—E. P. P.

2861 3. FUMARIA Linn., *Sp. Pl.*, ed. 1, p. 699 (1753)

Sepals 2, sometimes hyaline large and ovate. *Petals* 4; the posterior petal spurred or saccate at the base; lateral petals connate at the base with the posterior petal; anterior petal free. *Stamens* 6, in 2 bundles of 3 each; each bundle consisting of fused filaments often widened at the base and bearing at the apex the 3 stamens on short free portions of the filaments. *Ovary* with a solitary ovule; style often long, cylindric; stigma sometimes 2-lobed. *Fruit* a subglobose nut.

Herbaceous annuals; leaves much cut; inflorescence a short raceme.

Species about 60, natives of Europe, North Africa, and temperate Asia; found in South Africa as a weed of cultivation. (Type: *F. officinalis* Linn.)

2861a 4. DISCOCAPNOS Cham. & Schlecht., in *Linnaea*, vol. 1, p. 569 (1826)

Essential floral structure similar to that of *Fumaria* Linn., but differs in having a flattened symmetrical discoid fruit.

Herbaceous annuals; leaves much cut, furnished with tendrils; inflorescence a short raceme.

Endemic; species 2, recorded from the Cape, Knysna, and Humansdorp districts. (Type: *D. mundtii* Cham. & Schlecht.)

2862 5. TRIGONOCAPNOS Schltr., in *Engl. Bot. Jahrb.*, vol. 27, p. 131 (1900)

Essential floral structure similar to that of *Fumaria* Linn., but differs in having a flattened asymmetrical discoid fruit.

An annual herb, scandent; leaves 2—3-pinnate, furnished with tendrils; inflorescence a short raceme.

Endemic; species 1, recorded from the Clanwilliam district. (Type: *T. curvipes* Schltr.)

69. CRUCIFERAE

Flowers bisexual, usually regular. *Sepals* 4, free, with the inner often spurred or saccate at the base. *Petals* 4, rarely 0, spreading, entire, bilobed, very rarely lobulate or fimbriate, often long-clawed, much larger or scarcely longer than the sepals. *Stamens* normally 6, of which 4 are longer than the other 2, very rarely many or only 2—4, shorter or longer than the ovary; filaments usually linear, often toothed at the base, usually glandular at the base; anthers 2-theous, rarely 1-theous, often sagittate at the base, opening by longitudinal slits. *Ovary* sessile or rarely stalked, superior, usually 2-chambered owing to the presence of a septum, rarely 1-chambered or transversely septate, very rarely 3-chambered, with 1 to many ovules on 1—2-parietal placentas, rarely with a single basal ovule; style simple, sometimes almost 0, or sometimes dilated or horned under the stigma; stigmas 1—2, often capitate. *Fruit* elongated (a *siliqua*) or short (a *silicula*), 2-locular or 1-locular by the disappearance of the septum, very often 2-valved, sometimes indehiscent or breaking up transversely, often with a beak or tipped with the persistent style. *Seeds* 1 to many, various, often winged; endosperm 0; embryo curved; cotyledons usually accumbent or incumbent.

Annual, biennial, or perennial herbs, rarely undershrubs, glabrous or hairy, with the hairs simple or stellate or attached at the middle; leaves simple, very rarely compound, alternate, rarely opposite, often basal, entire, lobed, or much cut, frequently eared at the base; stipules 0; inflorescence usually a terminal raceme, rarely the racemes axillary, very rarely flowers solitary; bracts rarely present.

Genera over 200, with more than 2,200 described species, many of which are probably not valid, mostly massed in southern Europe and Asia Minor.

- | | | | |
|---|-----------------------------------|-----|----|
| 1. Fruit less than 4 times as long as broad or broader than long | ... | ... | 2 |
| Fruit at least 4 times as long as broad | ... | ... | 10 |
| 2. Small much-branched shrublets with the branches wire-like | | | |
| | 23. <i>Schlechteria</i> Bolus | | |
| Not as above | ... | ... | 3 |
| 3. Valves of fruit with strongly raised ridges radiating from the keeled centre | ... | ... | |
| | 4. <i>Cycloptychis</i> E. Mey. | | |
| Valves without strongly raised ridges | ... | ... | 4 |
| 4. Fruit 1-locular | ... | ... | |
| | 5. <i>Thlaspeocarpa</i> C. A. Sm. | | |
| Fruit 2-locular | ... | ... | 5 |
| 5. Petals showy, about six times as long as the calyx | | | |
| | 3. <i>Brachycarpaea</i> DC. | | |
| Petals as long as or a little longer than the calyx | ... | ... | 6 |
| 6. Plants pubescent, hoary, stellate, or scaly; hairs all or some branched | | | |
| | 22. <i>Alyssum</i> Linn. | | |
| Plants glabrous or with simple hairs... | ... | ... | 7 |
| 7. Fruits didymous | ... | ... | |
| | 8. <i>Coronopus</i> Gaertn. | | |
| Fruits not didymous | ... | ... | 8 |

8. Fruits cuneate at the base and notched above
Fruits elliptic or oblong, not cuneate at the base or notched above 9
18. Capsella Medic.
9. Leaves pinnate **1. Heliophila Linn.**
Leaves simple **7. Lepidium Linn.**
10. Leaves bipinnatipartite **19. Descurainia Webb & Berthelot.**
Leaves not bipinnatipartite 11
11. Leaves trifoliolate, on long petioles ... **17. Cardamine Linn.**
Leaves simple, entire or variously cut 12
12. Lower leaves opposite; upper leaves petioled and with a cordate base
6. Chamira Thunb.
Leaves all alternate, often radical 13
13. Fruits indehiscent or breaking transversely into 1-seeded portions
14. Raphanus Linn.
Fruits dehiscent by the valves falling off and leaving the membranous
septum 14
14. Fruit with a flattened ribbed beak ... **10. Eruca Linn.**
Fruit tipped with the persistent style or a conical not flattened beak ... 15
15. Fruit with transverse partitions separating the seeds
2. Carponema E. & Z.
Fruit without transverse partitions 16
16. Petals conspicuous, much larger than the sepals 17
Petals not conspicuous, equalling or not much larger than the sepals ... 18
17. Fruit compressed **1. Heliophila Linn.**
Fruit terete or 4-angled **13. Brassica Linn.**
18. Small unbranched herbs a few inches high; leaves basal
20. Arabidopsis Heynh.
Taller plants, mostly branched 19
19. Plants stellately tomentose **24. Matthiola R. Br.**
Plants glabrous or hairy but not with stellate hairs... .. 20
20. Tall unbranched closely leafy plants with definite basal leaves; fruits
long, linear **21. Turritis Linn.**
Plants not as above 21
21. Fruit terete 22
Fruit flattened or compressed 23
22. Fruit with a distinct conical beak ... **12. Erucastrum Presl**
Fruit without a distinct beak ... **9. Sisymbrium Linn.**
23. Inflorescence strigose **15. Barbarea R. Br.**
Inflorescence glabrous 24
24. Fruit valves flat, but sometimes with a prominent midrib
11. Diplotaxis DC.
Fruit valves convex or keeled ... **16. Nasturtium R. Br.**

2875 1. HELIOPHILA Linn., Sp. Pl., ed. 2, p. 926 (1763)

Sepals equal at the base. *Lateral stamens* simple or with a tooth at the base. *Siliqua* sessile, often pendulous or deflexed, dehiscent or subdehiscent, short

or elongated, compressed, linear, oblong, or lanceolate, sometimes 1—3-seeded and much constricted between the seeds, with the margins straight or sinuate, usually beaked; valves 1—3-nerved, flat, often membranous; septum hyaline; style short or elongated; stigma 2-lobed or discoid. *Seeds* 1 to many, in 1—2 rows, often bordered with a wing; cotyledons transversely twice folded.

Herbs, annual, more rarely shrubby, glabrous or pubescent; leaves alternate, rarely opposite, usually linear, more rarely broad and lanceolate, entire, toothed, sinuate or pinnatisect and with the segments linear; inflorescence a raceme; flowers white, yellow, rosy, or sky-blue; bracts 0.

Endemic; described species about 130 but probably not all valid; chiefly massed in the south-western districts of the Cape Province but fairly widely distributed otherwise.

2876 2. CARPONEMA E. & Z., Enum., p. 8 (1835)

Sepals spreading, equal at the base. *Petals* obovate-oblong, with a cuneate claw. *Lateral stamens* toothed at the base. *Siliqua* sessile, pendulous, slender, terete, tapering at each end, 2-locular, with 1 locus smaller and empty, constricted between the seeds; septum very thin; valves hardened, without nerves; style conical; stigma obtuse. *Seeds* in 1 row, terete, emarginate, separated by transverse partitions; cotyledons transversely twice folded.

An annual herb, glabrous or pilose; leaves elongate-linear; inflorescence an elongated raceme; flowers blue or purplish; pedicels filiform, erect in flower.

Endemic; species 1, found in the south-western districts of the Cape Province. (Type: *C. filiformis* E. & Z.)

2877 3. BRACHYCARPAEA DC., Mém. Mus. Paris, vol. 7, p. 247 (1821)

Sepals erect, ovate or oblong, usually shortly membranous at the apex, equal at the base or 2 sepals with 2 small sacs. *Petals* large, usually obovate, clawed. *Stamens* free; filaments linear, with 2 glands at the base; anthers linear, blunt or shortly sagittate. *Silicula* didymous, indehiscent, 2-locular; valves ventricose; septum very narrow; style shorter than the silicula, cylindric; stigma inconspicuous. *Seed* solitary in each locus, subglobose; funicle short; cotyledons spirally convolute.

Perennial undershrubs, glabrous; leaves sessile, linear, entire; flowers large, yellow or purple, arranged in elongated racemes; pedicels somewhat long; bracts 0.

Endemic; species 2 or 3, ranging from the Clanwilliam to the Riversdale district. (Type: *B. varians* DC.)

2878 4. CYCLOPTYCHIS E. Mey., in Drège Zwei Pfl. Docum., p. 176 (1843)

Sepals suberect, equal at the base. *Petals* oblong, narrowing into a claw. *Stamens* free, not toothed. *Silicula* erect, nut-like, somewhat double-convex, beaked, 2-locular, 2-seeded; valves keeled in the centre, with strong raised ribs radiating from the keel to the margins, septum somewhat thick; style rigid, subulate, elongate. *Seeds* pendulous from the apex of each locus by a very short funicle, orbicular, compressed.

Herbs or erect undershrubs, glabrous; leaves scattered, sessile, linear, entire; flowers remote, somewhat large, purple or rosy, arranged in a terminal elongated raceme; pedicels thickened upwards; bracts 0.

Endemic; species 3, only known from the south-western districts of the Cape Province. (Type: *C. virgata* E. Mey.)

2279 **5. THLASPEOCARPA** C. A. Smith, in Kew Bull., p. 155 (1931).
(*Palmstruckia* Sond.)

Sepals more or less oblong, not saccate at the base. *Petals* obovate, scarcely clawed. *Stamens* almost as long as the ovary; filaments linear; anthers much shorter than the filaments. *Ovary* compressed, elliptic in outline; stigma capitate, subsessile. *Silicula* on long peduncles, suborbicular or obovate, much compressed and discoid, 1-locular, 1-seeded. *Seed* orbicular, compressed, with a marginal membranous wing; cotyledons linear, incumbent, transversely twice folded.

An erect glabrous herb; leaves sessile, linear, glabrous; inflorescence an elongated raceme; pedicels filiform; bracts 0.

Endemic; species 1, recorded from the Calvinia district and Namaqualand. (Type: *T. capensis* (Sond.) C. A. Smith=*Palmstruckia capensis* Sond.)

2280 **6. CHAMIRA** Thunb., Nov. Gen., vol. 2, p. 48 (1782)

Sepals more or less oblong-linear; the lateral sepals broader and saccate at the base. *Petals* obovate, long clawed. *Stamens* free, longer than the ovary; filaments linear; anthers linear, almost as long as the filaments. *Ovary* 1-chambered, with few (3) ovules; style short; stigma simple. *Fruit* linear or linear-oblong in outline, shortly and bluntly beaked; valves somewhat flattened, striate, without nerves. *Seeds* few, in 1 row, ovate, compressed, with a mucilaginous testa; cotyledons transversely 2-folded; radicle filiform.

Slender glabrous annual herbs; leaves thinly membranous, somewhat ovate or semi-orbicular, cordate at the base, coarsely toothed or margins almost entire; lower leaves opposite; upper leaves alternate; inflorescence a short few-flowered raceme; flowers white.

Endemic; species 1, recorded from the Cape, Malmesbury, and Worcester districts of the Cape Province. (Type: *C. cornuta* Thunb.)

2283 **7. LEPIDIUM** Linn., Sp. Pl., ed. 1, p. 643 (1753)

Sepals short, equal at the base. *Petals* 4, small or wanting. *Stamens* 6 (2—4 sometimes wanting or malformed). *Silicula* oblong, ovate, obovate, or orbiculate, rarely subglobose, mostly strongly laterally compressed, keeled, emarginate at the apex, sometimes winged; valves often boat-shaped; septum narrow, membranous; style 0 or filiform; stigma emarginate. *Seed* solitary or very rarely 2 in each loculus, pendulous from the apex of the septum, compressed or sub-3-angled; cotyledons in 1 species accumbent, in the rest 3-partite.

Herbs or undershrubs of various habit, glabrous or pubescent, sometimes with a well-developed tap-root; leaves various, often linear; flowers in racemes, small, white or mauve.

Described species over 100, found in all temperate and warm countries; about 12 species in South Africa, widely distributed. (Type: *L. latifolium* Linn.)

2284 **8. CORONOPUS** Boehm., Ludw. Def. Gen. Pl., ed. 3, p. 226
(1760)
(*Senebiera* Poir.)

Sepals small, 4, equal at the base. *Petals* 4, slightly larger than the sepals, sometimes spathulate. *Stamens* free, sometimes only 2 or 4, without teeth, about as long as the gynaecium. *Ovary* didymous, subcompressed; style almost 0; stigma simple. *Silicula* didymous, laterally compressed or subglobose, with the 2 halves indehiscent, with 1 seed in each loculus; valves

subglobose, rugose or crested. *Cotyledons* long, linear, attenuated into the radicle, incumbent or conduplicate.

Annual or perennial herbs, branched at the base and with the branches diffusely spreading, often with a well-developed tap-root; leaves alternate, entire and often linear or pinnatisect; flowers small, white, rarely purplish, in short racemes opposite the leaves.

Species 10—12, found in all tropical countries; 5 species recorded from South Africa, widely distributed. (Type: *C. procumbens* Gilib.)

2917 9. SISYMBRIUM Linn., Sp. Pl., ed. 1, p. 657 (1753)

Sepals 4, short or elongate, equal at the base or the lateral subsaccate. *Petals* 4, elongate, sometimes not much longer than the sepals, sometimes clawed with the limb crisped. *Stamens* free, without teeth, sometimes as long as the petals; anthers sometimes sagittate at the base. *Ovary* cylindric; style often very short; stigma capitate, sometimes 2-lobed. *Siliqua* linear or semi-terete, very often many-seeded, often constricted between the seeds; valves often 3-nerved; septum membranous, 2-nerved or without nerves. *Seeds* in 1 row in each loculus, more rarely in 2 rows; cotyledons incumbent or oblique.

Annual or biennial herbs, glabrous, pilose, or cano-tomentose; radical leaves arranged in a stellate manner; cauline leaves alternate, often amplexicaul, entire, lobed, pinnatifid or pinnatisect; flowers sometimes white or rosy, more often yellow, in lax racemes, rarely axillary; bracts usually 0.

Species about 77, mostly natives of the northern hemisphere; about 9 species in South Africa, besides several introduced species, widely distributed. (Type: *S. altissimum* Linn.)

2944 10. ERUCA Adans., Fam., vol. 2, p. 418 (1763)

Sepals 4, oblong; the 2 interior broader and somewhat saccate at the base. *Petals* long-clawed, with an obovate limb, longer than the sepals. *Stamens* longer than the gynaeceum; filaments linear; anthers sagittate at the base. *Ovary* somewhat 4-angled; style linear; stigma globose. *Siliqua* oblong or oblong-linear in outline, beaked with the persistent flattened style; valves somewhat keeled. *Seeds* brown, few or many, in 2 rows, ellipsoid; cotyledons conduplicate.

Annual or perennial herbs, erect, branching, more or less hispid or almost glabrous; leaves pinnatifid; flowers lilac or yellow, veined with violet, arranged in racemes; pedicels slender; bracts 0.

Species 5, natives of the Mediterranean region and western Asia; 1 species naturalized in South Africa.

2946 11. DILOTAXIS DC., Syst., vol. 2, p. 628 (1821)

Sepals 4, oblong; the inner rarely broader than the outer. *Petals* usually yellow, broad, rarely narrowly obovate, narrowed into a short claw. *Stamens* usually 6; anthers oblong, obtuse, rarely somewhat acute. *Ovary* cylindric; ovules 16—25, in 2 rows; stigma more or less bilobed, sometimes large. *Siliqua* linear, more or less compressed; beak equalling the valves, or shorter, 3-nerved, rarely with 1—2 seeds; valves flat, 1-nerved; septum hyaline. *Seeds* in 2 rows, very small; cotyledons more or less longitudinally conduplicate.

Annual herbs, hispid or scabrid, rarely glabrous; lower leaves shortly petioled; upper leaves sessile and narrowed or dilated at the base, lyrate, pinnatisect, flowers in racemes.

Species 19, mostly natives of the Mediterranean region and central Europe; a few species found naturalized in South Africa.

2947 12. ERUCASTRUM Presl, Fl. Sic., vol. 1, p. 92 (1826)

Sepals equal, oblong or linear-oblong, scarcely saccate at the base. *Petals* not greatly exceeding the sepals, narrowly obovate or linear-oblong, gradually passing into a claw. *Stamens* almost as long as the gynaeceum; filaments linear; anthers subsagittate at the base. *Ovary* subcylindric, many-ovuled, with the ovules in 1 row; style often very short; stigma depressed-capitate. *Siliqua* linear, tipped with the short style; valves boat-shaped, keeled; septum hyaline. *Seed* more or less uniseriate, ovoid or oblong, rarely subglobose; cotyledons longitudinally conduplicate.

Annual, biennial, or perennial herbs, hairy, rarely glabrous; leaves variously lyrato-pinnatifid; the upper sometimes linear; flowers arranged in a raceme.

Species 15, mostly found in central and southern Europe, the Canary Islands; 3 species found in South Africa, recorded from the south-western and south-eastern districts of the Cape Province, Griqualand West, Bechuanaland, and South West Africa.

2949 13. BRASSICA Linn., Sp. Pl., ed. 1, p. 66 (1753)

Sepals 4; outer oblong; inner often wider, ovate, subsaccate at the base. *Petals* yellow, rarely white, obovate, narrowed into a claw. *Stamens* often 6; anthers acute or subacute at the apex. *Ovary* cylindric, 5—45-ovuled, with the ovules in 1 (rarely sub-2-) series; stigma capitate or subbilobed. *Siliqua* narrow or broadly linear or oblong, straight, often with a conical rarely cylindric beak or with a filiform projection; valves convex, with a prominent median nerve; septum hyaline. *Seeds* in 1 row, globose or rarely ovoid; cotyledons longitudinally conduplicate.

Annual or perennial herbs, sometimes with a hardened stem, sometimes shrubby, glabrous or hairy; root fusiform; leaves alternate; the lower often rosulate, petioled, sessile, amplexicaul; the upper entire or variously lyrato-pinnatifid.

Species about 33, mostly found in the Mediterranean region; a few species found naturalized in South Africa. (Type: *B. oleracea* L.)

2950 14. RAPHANUS Linn., Sp. Pl., ed. 1, p. 669 (1753)

Sepals 4, oblong or linear-oblong; the inner somewhat broader and subsaccate at the base. *Petals* longer than the sepals, broadly oblong, produced into a long claw. *Stamens* 6, as long as or slightly longer than the gynaeceum; filaments linear; anthers scarcely sagittate at the base. *Glands* 2, cushion-like, sometimes minute. *Ovary* cylindric; style somewhat compressed; stigma capitate. *Siliqua* with a distinct cylindric beak, sometimes 1—2-seeded, breaking transversely. *Seed* ovoid or subglobose, rarely oblong in outline; cotyledons longitudinally conduplicate.

Annual, more rarely biennial, herbs, more or less hispid or glabrous; root often succulent; leaves often lyrato-pinnatisect; flowers white or yellow, veined with purple, on slender pedicels arranged in elongated terminal racemes, or racemes opposite the leaves; bracts 0.

Species about 7, mostly native of the Mediterranean region; 1 or 2 species naturalized in South Africa. (Type: *R. sativus* Linn.)

2961 15. BARBAREA R. Br., Ait. Hort. Kew., ed. 2, vol. 4, p. 109 (1812)

Sepals 4, suberect, equal at the base. *Petals* clawed. *Stamens* 6, free, without teeth. *Glands* present round the base of the ovary. *Siliqua* elongated, compressed 4-angled, with many seeds in 1 row in each loculus; septum hyaline; valves ribbed or keeled; style short; stigma capitate or 2-lobed. *Seeds* oblong in outline, immarginate, with a free funicle; cotyledons accumbent.

Herbs, biennial or perennial, erect, branched, with angled stems; leaves alternate, runcinate or sinuate-pinnatifid; flowers yellow, in racemes or panicles; bracts sometimes present.

Species 14, cosmopolitan; 1 species naturalized in South Africa. (Type: *B. vulgaris* R. Br.)

2965 16. NASTURTIUM R. Br., Ait. Hort. Kew., ed. 2, vol. 4, p. 109 (1812)

(*Roripa* Scop.)

Sepals short, spreading, equal at the base. *Petals* usually small, scarcely clawed, sometimes 0. *Stamens* 1—6. *Siliqua* short or elongated, terete or nearly so, rarely didymous; valves faintly 1-nerved; septum hyaline; style short or slender and elongate; stigma simple or 2-lobed. *Seeds* in 2 rows, very rarely irregularly in 1 row, small, turgid, with a short free funicle; cotyledons accumbent.

Aquatic or terrestrial herbs, with erect or creeping stems; leaves alternate, toothed, lobed, or pinnately dissected, glabrous or pubescent, with simple hairs; flowers small, yellow or white, in terminal or axillary racemes; bracts sometimes present.

Species about 50; 2 or 3 species naturalized in South Africa.

2966 17. CARDAMINE Linn., Sp. Pl., ed. 1, p. 654 (1753)

Sepals 4, spatulate or oblong, equal or nearly so at the base. *Petals* 4, obovate, shortly or long-clawed. *Stamens* 6, shorter than the ovary; filaments linear; anthers linear. *Ovary* linear; style sometimes almost none or not differentiated from the ovary; stigma almost truncate, faintly lobed. *Siliqua* elongated, narrow, flattened, often erect; valves nerveless or almost so, elastically opening at maturity; septum hyaline; style short or elongated; stigma capitate or 2-lobed. *Seeds* in 1 row, compressed, immarginate; cotyledons accumbent, 1 sometimes overlapping the radicle.

Annual or perennial herbs, with erect or weak and creeping stems; leaves alternate, sometimes opposite or in whorls of 3, entire or pinnatisect (long petioled and trifoliolate in the South African species); flowers white, pink, or purple; inflorescence a raceme or panicle, erect or drooping; bracts 0.

Species about 90, found in temperate, alpine, and arctic regions; 1 species recorded from South Africa, extending from the Swellendam district, through the coastal belt to Natal and the northern Transvaal. (Type: *C. pratensis* Linn.)

2986 18. CAPSELLA Medic., Pflanzeng., vol. 1, p. 85 (1792)

Sepals 4, oblong, spreading, equal at the base. *Petals* not much longer than the sepals, obovate, narrowed into a claw. *Stamens* free, longer than the gynaeceum; filaments linear; anthers small. *Ovary* obcordate; style short; stigma capitate. *Siliqua* elliptic, oblong, or obcordate, strongly compressed, more or less deeply notched at the apex; valves boat-shaped, keeled; septum membranous; style short; stigma capitate. *Seeds* many in each loculus, immarginate, with the funicle free; cotyledons accumbent.

Annual herbs, often weak, glabrous or pilose, with branched stems; leaves radical, often rosulate, entire or lobed; inflorescence a raceme; flowers white, small; pedicels slender.

Species 4, cosmopolitan; 1 species naturalized in South Africa. (Type: *C. bursa-pastoris* Medic.)

- 2997 19. *DESCURAINIA* Webb & Berthelot., Phytogr. Canar., vol. 1, p. 72 (1836—40)

(Excluding Section *Irio*)

Sepals 4, the inner slightly broader than the outer, equal at the base. *Petals* 4, equalling or shorter than the sepals, rarely larger, spathulate. *Stamens* 6, often exceeding the sepals and petals; anthers oblong, obtuse. *Ovary* cylindric, with few to many ovules; styles very short; stigma depressed-capitate. *Siliqua* linear or semi-terete, capped with the very short style, dehiscent; valves with a distinct median nerve and fine lateral nerves; septum hyaline. *Seeds* oblong in outline or ellipsoid, sometimes narrowly winged at one end; cotyledons oblong, equalling the radicle.

Mostly annuals, sometimes perennial and shrubby, often covered with stellate hairs, rarely hairs simple, often hairs glandular; lower leaves petioled; upper leaves sessile; all bipinnatifid; flowers usually small, arranged in racemes.

Species 40, mostly in the cold and temperate regions of America; some in Asia and Europe; 1 species recorded from Namaqualand. (Type: *D. sophia* (L.) Webb)

- 2999 20. *ARABIDOPSIS* Heynh., in Holl. et Heynh. Fl. Sachs., vol. 1, p. 538 (1842)

(*Stenophragma* Celak.)

Sepals erect-spreading, subequal, oblong, obtuse; the inner not or scarcely saccate. *Petals* white, lilac, or yellow, obovate-cuneate or spathulate, longer than the sepals. *Stamens* 6, rarely 5 or 4, shorter than the ovary; filaments thin; anthers oblong or ovoid. *Ovary* narrowly cylindric; style short, hardly thinner than the ovary; stigma capitate, rarely sub-2-lobed. *Siliqua* somewhat terete; valves 1-nerved; septum usually white and hyaline, rarely yellow and firm. *Seeds* in 1, rarely 2, rows, with the testa becoming mucilaginous in water; radicle incumbent.

Slender annual or biennial herbs, sometimes perennial; leaves oblong; basal leaves petioled; cauline leaves sessile or sagittate and amplexicaul, entire, toothed, or lyrate-pinnatifid; flowers in short racemes; bracts sometimes present.

Species 11, found in Europe, Asia, and Africa; 1 species found in South Africa. (Type: *A. thaliana* (L.) Heynh. = *Arabis thaliana* Linn.)

- 3000 21. *TURRITIS* Linn., Sp. Pl., ed. 1, p. 644 (1753)

Sepals 4, linear-oblong, equal, not saccate at the base. *Petals* 4, linear-oblong, in the South African species about as long as the sepals. *Stamens* 6, shorter than the ovary; filaments linear; anthers shortly sagittate at the base. *Ovary* linear in outline; style almost 0; stigma capitate. *Siliqua* linear; valves with a distinct median rib; seeds in 2 rows, sometimes with a narrow marginal wing; radicle accumbent.

Annual or perennial herbs; leaves alternate, sometimes mainly basal, usually entire; inflorescence a raceme; bracts 0.

Species about 5, cosmopolitan; 1 species in South Africa recorded from Basutoland, Natal, and the Barkly East, Molteno, and Somerset East districts of the Cape Province. (Type: *T. glabra* Linn.)

- 3006 22. *ALYSSUM* Linn., Sp. Pl., ed. 1, p. 650 (1753)

Sepals 4, somewhat short, erect or spreading, equal at the base. *Petals* slightly longer than the sepals. *Stamens* 5, rarely 4, without teeth or some or all toothed, more rarely with 2 glands at the base. *Silicula* always short, distinctly polymorphic, ovate, oblong, obovate, or elliptic, compressed or

turgid, with 1—10 seeds in each loculus; valves flat or concave in the centre and flat at the margins; septum membranous, entire or perforated; style short or elongate; stigma simple. *Seeds* flattened, with the funicle free or adnate to the septum; cotyledons accumbent.

Herbs or undershrubs, often rigid, pubescent, hoary, stellate or scaly; leaves scattered or crowded at the base, entire, often linear; inflorescence a raceme; flowers white or yellow, often inconspicuous.

Species about 100, natives of the Mediterranean region and central Europe; 2 species recorded from the south-western districts of the Cape Province. (Type: *A. montanum* Linn.)

3008 **23. SCHLECHTERIA** Bolus, Engl. Bot. Jahrb., vol. 24, p. 455 (1897)

Calyx coloured, petaloid, equal at the base. *Petals* large, obovate, clawed. *Stamens* free, without teeth. *Ovary* 3-chambered, with 1—2 ovules in each chamber; style short; stigma undivided, covered with dense papillae. *Silicula* membranous, elliptic, flat, compressed, very narrowly marginate, with reticulate veining, 1-locular by the disappearance of the septum, by abortion 1-seeded. *Seed* pendulous from the side of the loculus by a long funicle, suborbicular, compressed, not winged; embryo curved; cotyledons accumbent.

An erect shrublet with stiff wire-like branches; leaves alternate, small, linear; flowers rosy, in lax terminal racemes; bracts 0.

Endemic; species 1, recorded from the Clanwilliam district of the Cape Province. (Type: *S. capensis* Bolus)

3042 **24. MATTHIOLA** R. Br., Ait. Hort. Kew., ed. 2, vol. 4, p. 119 (1812)

Sepals erect; the 2 lateral saccate at the base (in the South African species) linear-oblong, equal at the base, glandular. *Petals* slightly longer than the sepals, with the limb spathulate and produced into a long claw. *Stamens* sometimes 4 long and 2 short; the longer stamens as long as the ovary and the two short stamens shorter; filaments of short stamens linear, those of long stamens broader; anthers oblong. *Glands* 4, 1 on either side of filaments of the short stamens. *Ovary* cylindric (glandular in the South African species); style 0; stigma faintly 2-lobed. *Siliqua* elongated, terete, or compressed, sometimes slightly moniliform; valves ribbed (in the South African species hairy and glandular). *Seeds* in 1 row, compressed, often margined, with a free funicle; cotyledons accumbent.

Herbs or undershrubs, stellately tomentose; leaves oblong or linear, entire or sinuate; inflorescence a raceme; flowers white or purple; bracts 0.

Species about 50, natives of western and southern Europe, western Asia, and Africa; 1 species in South Africa; recorded from the Herbert, Steynsburg, Aliwal North, Barkly East, and Hanover districts of the Cape Province; from Philippolis in the Orange Free State; from Bloemhof in the Transvaal and from South West Africa. (Type: *M. incana* R. Br.)

70. CAPPARIDACEAE

Plants very rarely dioecious. *Flowers* bisexual, very rarely unisexual, regular or rarely irregular. *Sepals* 3—8, free or joined to form a distinct tube, in 1—2 rows, imbricate or valvate. *Petals* usually 4, rarely more, sometimes 0. *Torus* short or elongate, rarely with an appendix. *Disc* various or absent. *Stamens* few to many, inserted at the base or high up on the torus; filaments

free, usually terete; anthers 2-theous, usually oblong, sometimes with a small apical appendage. *Ovary* superior, sessile or shortly stalked or on a very long stalk, 1-chambered, or 2- or more-chambered by the intrusion of the placentas, with few to many ovules on 1 to many placentas; ovules often in 2 rows; style evident or none; stigma often sessile and capitate. *Fruit* a capsule or berry, very rarely a drupe, sometimes moniliform. *Seeds* often reniform; embryo curved; endosperm scanty or 0.

Herbs, shrubs, or trees, sometimes scandent, glabrous, variously hairy or scaly; leaves alternate, very rarely opposite, simple or 3—5-foliolate, sometimes crowded on abbreviated shoots, rarely not developed or soon deciduous; stipules, when present, setaceous or spinescent; flowers axillary, fascicled or solitary, or arranged in a terminal corymb or raceme, sometimes on abbreviated shoots or arising on the old wood.

Genera about 40, with between 300 and 400 species, natives of warm and tropical countries.

- | | | | | | | | | |
|--|-----|-----|-----|-----|-----|-----|----------------------|---|
| 1. Herbs; fruit a capsule... | ... | ... | ... | ... | ... | ... | ... | 2 |
| Woody plants; fruit a berry or drupe | ... | ... | ... | ... | ... | ... | ... | 3 |
| 2. Stamens few to many, inserted on a small subglobose receptacle | | | | | | | | |
| | | | | | | | 1. Cleome Linn. | |
| Stamens 3—6, on a long slender gynophore | | | | | | | 2. Gynandropsis DC. | |
| 3. Sepals joined to form a distinct tube | ... | ... | ... | ... | ... | ... | ... | 4 |
| Sepals free or connate at the base only | ... | ... | ... | ... | ... | ... | ... | 5 |
| 4. Leaves 5-foliolate; flowers in umbellate clusters on the old wood | | | | | | | | |
| | | | | | | | 3. Bachmannia Pax | |
| Leaves simple or 3-foliolate; flowers solitary or fascicled, or in terminal racemes or corymbs | | | | | | | 8. Maerua Forsk. | |
| 5. Disc large and conspicuous, variously shaped, often unilateral | | | | | | | | |
| | | | | | | | 7. Cadaba Forsk. | |
| Disc annual or wanting | ... | ... | ... | ... | ... | ... | ... | 6 |
| 6. Petals 4 | ... | ... | ... | ... | ... | ... | 4. Capparis Linn. | |
| Petals 0 | ... | ... | ... | ... | ... | ... | ... | 7 |
| 7. Sepals 4; flowers small, in terminal racemes or racemes on abbreviated shoots | | | | | | | | |
| | | | | | | | 5. Boscia Lam. | |
| Sepals 3; flowers large, solitary, axile | | | | | | | 6. Courbonia Brongn. | |

3082

1. CLEOME Linn., Sp. Pl., ed. 1, p. 671 (1753)

(*Polanisia* Rafin., *Dianthera* Klotzsch, *Tetratelia* Sond., *Chilocalyx* Klotzsch)

Sepals 4, spreading, persistent or deciduous, linear or lanceolate, sometimes acuminate, often glandular. *Petals* 4, sessile or clawed, much longer or scarcely longer than the sepals. *Stamens* 6 to many, all fertile or some fertile and others sterile, usually on a small subglobose receptacle; filaments equal or unequal; anthers 2-theous, usually oblong, sometimes with a small apical projection. *Ovary* sessile or shortly stalked, frequently glandular, with many ovules on 2 parietal placentas; style short or long or almost 0, often cylindric; stigma truncate or capitate. *Fruit* an oblong or linear capsule, opening by 2 valves which separate from the seed-bearing placentas, often tipped with the persistent style; valves smooth or strongly ribbed, sometimes glandular. *Seeds* reniform, usually rough or ridged.

Herbs, mostly annual, sometimes shrubby; leaves usually petioled, simple or digitately 3—9-foliolate, with the leaflets linear, filiform, lanceolate, or elliptic; flowers in terminal racemes.

Species over 150, found in all warm countries; 15 species in South Africa, extending from the northern Transvaal, through Natal to Griqualand East, Basutoland, and the Orange Free State; also recorded from Namaqualand, South West Africa, and Bechuanaland. (Type: *C. ornithopodioides* Linn.)

3087 2. GYNANDROPSIS DC., Prodr., vol. 1, p. 237 (1824)

Sepals 4, spreading, often lanceolate and glandular, sometimes deciduous. *Petals* 4, sometimes shorter than the gynophore, spreading, obovate, entire, sometimes crenulate, clawed, imbricate or open in bud. *Stamens* about 6, sometimes 3 very short, adnate to the long slender gynophore, sometimes almost as long as the gynaecium; filaments semi-terete; anthers oblong. *Ovary* stalked, usually linear in outline, with many ovules on 2 placentas, often glandular; style short or elongated; stigma small or capitate, 2-lobed. *Fruit* a capsule, compressed or somewhat terete, often elongated, usually tipped with the persistent style and stigma; valves sometimes ribbed and glandular. *Seeds* reniform or orbicular, sometimes resembling a curled-up caterpillar in shape, rugose or tuberculate.

Annual herbs, glabrous, pilose, or glandular; leaves 3—7-foliate, with the lower leaves sometimes petioled and the upper sessile; leaflets sometimes obovate; flowers white or purple, often showy, in leafy racemes.

Species about 21, natives of the tropics; 1 species found in South Africa recorded from the Transvaal, Natal, the north-western districts, the western Orange Free State, and South West Africa; rare in the eastern districts. (Type: *G. pentaphylla* DC.)

3097 3. BACHMANNIA Pax, in Engl. & Prantl, Nat. Pflanzenfam., Nachtr., p. 177 (1897)

Calyx-tube campanulate, intruse at the base; lobes 4 or 5, oblong, some or all 3-toothed, veined. *Petals* 0. *Stamens* 13—15, on a short torus; filaments about as long as the gynaecium, terete; anthers oblong, bluntly sagittate at the base. *Ovary* on a long terete gynophore, ellipsoid, with about 7 ovules; style almost 0; stigma about as broad as the ovary, capitate. *Fruit* subglobose.

Small trees; leaves digitately 5-foliate; leaflets coriaceous, large, elliptic; flowers in few-flowered umbels on the old wood.

Endemic, species 2, recorded from Natal and Pondoland. (Type: *Niebuhrria woodii* Oliv. = *B. woodii* (Oliv.) Gilg)

3101 4. CAPPARIS Linn., Sp. Pl., ed. 1, p. 503 (1753)

Sepals 4, very rarely 5, usually free, often deeply concave, usually hairy. *Petals* 4, longer than the sepals, obovate or oblong, rarely shortly clawed, usually hairy. *Torus* subglobose or not distinct. *Stamens* numerous, rarely few, usually longer than the gynaecium; filaments terete, anthers oblong. *Ovary* on a long or short stalk, flask-shaped or subglobose, with many ovules; stalk sometimes longer than the stamens, sometimes pilose; style usually 0; stigma not evident, sometimes shortly 2-lobed, sometimes capitate. *Fruit* fleshy, sometimes reddish when ripe, varying in size from that of a pea to a small plum, usually globose. *Seeds* many, with a leathery or crustaceous testa, immersed in a pulp.

Trees or shrubs, often scandent, unarmed, spinous, or prickly, glabrous, scaly, or tomentose; leaves simple, rarely undeveloped, alternate or rarely opposite; stipules bristle-like or spiny; flowers generally white or cream-coloured; buds usually globose; inflorescence a raceme, panicle, or corymb, usually axillary.

Species about 300, found in all warm and tropical countries; 16 species recorded from South Africa, extending from the northern Transvaal, through Natal and the coastal belt to the Knysna district; rare in the central districts. (Type: *C. spinosa* Linn.)

3106 **5. BOSCIA** Lam., *Encycl. Meth. Illustr. Gen.*, p. 517, t. 395 (1797)

Sepals 4, free to the base or very nearly so, valvate. *Petals* 0. *Disc* forming an entire or fimbriated ring at the base of the calyx. *Stamens* 6—20, inserted on the torus, free or connate at the base, usually longer than the gynaecium. *Ovary* stalked, ovoid or globose, with few (6—12), rarely numerous, ovules on 1—2 placentas; style short; stigma capitate, sometimes 2-lobed. *Fruit* shortly stalked or sessile, crustaceous or leathery, globose, varying in size from that of a pea to that of a small cherry, tomentose or glabrous, 1- or few-seeded, indehiscent. *Seed* lying in a pulp; testa crustaceous; cotyledons folded; radicle curved.

Unarmed shrubs; leaves alternate, simple, leathery, varying much in shape, mostly crowded on abbreviated shoots; stipules setaceous; flowers usually small, in racemes or corymbs on the abbreviated shoots.

An African genus of 55 species; 8 species in South Africa, recorded from the Transvaal, Natal, the eastern coastal districts, the north-western districts, and South West Africa. (Type: *B. senegalensis* (Pers.) Lam.)

3108 **6. COURBONIA** Brongn., *Bull. Soc. France*, vol. 7, p. 901 (1860)

Sepals usually 3, free to the base. *Petals* 0. *Torus* obovoid, evident. *Disc* (at least in the South African species) an evident cup. *Stamens* many, shorter than the gynaecium; filaments terete; anthers elliptic, with a small apical appendage. *Ovary* on a long terete stalk, somewhat clavate, 2-chambered, with 2 ovules in each chamber; style 0; stigma somewhat capitate. *Fruit* leathery, on a woody pedicel, varying in size from that of a cherry to a small plum. *Seed* usually solitary; cotyledons large, thick, variously lobed; radicle short, thick, curved.

Woody or herbaceous plants; leaves simple, alternate, shortly petioled, entire, somewhat glaucous; flowers of moderate size.

An African genus of 13 species; 1 species recorded from the Zoutpansberg district of the Transvaal. (Type: *C. virgata* Brongn.)

3109 **7. CADABA** Forsk., *Fl. Aegypt. Arab.*, p. 67 (1775)
(*Schepperia* Neck.)

Sepals 4, unequal, in 2 series; the outer pair valvate and enclosing the inner pair. *Petals* 2—4, inserted on the torus, clawed, in the South African species 0. *Disc* large and conspicuous, sometimes campanulate and 2-lobed with the lobes toothed, sometimes broadly tubular and curved with an oblique mouth, sometimes more or less oblong in outline and adhering to the torus on one side and saccate at the base, sometimes trumpet-shaped or spatulate with a tubular claw and equalling the claw of the petals. *Torus* long-cylindric. *Stamens* 4—8, inserted high up on the torus; filaments terete; anthers oblong. *Ovary* long-stalked, 1-chambered or appearing 2-chambered owing to the cohesion of the placentas, with many ovules in 2 rows on 2—4 placentas; style 0; stigma capitate. *Fruit* fleshy, cylindric, indehiscent, or leathery and tardily dehiscent by 2 valves, sometimes densely glandular with stalked or sessile glands. *Seed* somewhat kidney-shaped, with a crustaceous ridged testa; embryo curved; cotyledons folded on themselves.

Shrubs, unarmed or with the branches spinescent above, sometimes branches subsucculent and leafless; branches sometimes scurfy; leaves simple, 3-foliolate, or undeveloped; flowers yellowish or purplish; inflorescence an axillary solitary raceme or corymb.

Species about 34, natives of Africa, tropical Asia, Arabia, and Australia; 3 or 4 species in South Africa, extending from the Transvaal and Natal to the Riversdale district; also found in the central districts, British Bechuanaland, and South West Africa.

3112 8. MAERUA Forsk., Fl. Aegypt. Arab., p. 104 (1775)

(*Niebuhr* DC.)

Calyx-tube campanulate, tubular, or infundibuliform, often ribbed, more or less persistent; lobes 4, very rarely 3, deciduous. *Petals* 4 or 0, inserted in the mouth of the calyx-tube, very much smaller than the calyx-lobes, elliptic, ob lanceolate, or spatulate. *Disc* usually distinct, lining the calyx-tube, with or without a free toothed fimbriate or nearly entire margin. *Torus* columnar, equalling or slightly exceeding the calyx-tube. *Stamens* several or many, inserted on the torus; filaments terete; anthers oblong. *Ovary* cylindric or ellipsoid, 1-chambered, with several or many ovules in 2 rows on 2 placentas; style 0; stigma capitate. *Fruit* often on a woody stalk, a berry, ovoid, globose, or ellipsoid, or narrow, sometimes moniliform, sometimes separating into 1-seeded portions; pericarp often leathery, smooth or sometimes warted.

Shrubs or small trees, without spines, glabrous or pubescent; leaves sometimes crowded on abbreviated shoots, simple or 3-foliolate, sessile or petioled, variously shaped, sometimes narrowly linear; flowers axillary, solitary or fascicled or in terminal racemes or corymbs.

Species about 100, natives of Asia, India, and Africa; 11 species found in South Africa, ranging from the Transvaal, Zululand, and Natal, through the eastern districts to the Albany district; also recorded from South West Africa. (Type: *M. crassifolia* Forsk.)

71. RESEDACEAE

Flowers bisexual, rarely unisexual, mostly zygomorphic. *Calyx* persistent, 4—8-partite, unequal or subequal; lobes imbricate. *Petals* 4—8, rarely 2 or 0, small and inconspicuous, sometimes with a scale at the base. *Disc* present, often dilated on the adaxial side. *Stamens* 3—40, perigynous or inserted on the disc; filaments free or connate below; anthers 2-theous. *Gynaecium* of 2—6 distinct carpels or carpels united to form a 1-chambered ovary; ovary sessile or stalked, superior, often open at the top, with many, rarely few, ovules on parietal placentas; stigmas sessile. *Fruit* an open dry or fleshy capsule or of follicles. *Seeds* many, rarely few, reniform or horseshoe-shaped; embryo curved; endosperm 0.

Annual or perennial herbs, rarely shrubby; leaves scattered or fascicled, simple, trifid, or pinnatifid; stipules very small, gland-like; inflorescence a raceme or spike; bract 1, subtending each flower.

Genera 6, with about 70 species, natives of South Europe, North and South Africa, Asia Minor, and Persia.

3126 1. OLIGOMERIS Cambess., Jacquem. Voy. Bot., p. 23, t. 25 (1838)

Calyx 4—5-partite; segments sometimes unequal. *Petals* 2, simple, free or connate at the base. *Disc* inconspicuous. *Stamens* 3—8, situated on the

unilateral disc; filaments connate at the base. *Ovary* sessile, 4-angled, with 4 conical points and with many ovules on 4 parietal placentas. *Fruit* a membranous inflated 4-horned capsule, open at the summit. *Seeds* many, black, shining, horseshoe-shaped.

Annual or perennial herbs, woody at the base; leaves linear, entire, scattered or fascicled; flowers small, in terminal, sometimes laxly flowered, spikes; bract linear, longer than the flowers.

Species 10, natives of Africa, Syria, Persia, and India; 6 species in South Africa, extending from the Transvaal to the eastern parts of the Karoo, the north-western districts of the Cape Province, and from Natal to the Albany district. (Type: *O. glaucescens* Cambess.=*O. subulata* (Del.) Boiss.)

72. MORINGACEAE

Flowers bisexual, irregular. *Calyx-tube* short; lobes 5, unequal, imbricate, sometimes reflexed. *Petals* 5, similar to the sepals, inserted at the mouth of the calyx-tube; the 2 upper smaller; the lateral ascending; the anterior large and projecting outwards. *Disc* not very distinct, lining the calyx-tube. *Stamens* inserted on the margin of the disc, 5 fertile, 5 sterile; filaments free, usually stout and terete and villous; anthers 1-theous. *Ovary* superior, stalked, terete, 1-chambered, with many ovules on 3 parietal placentas, villous; style terete, slightly thickened upwards; stigma more or less truncate. *Fruit* an elongated (sometimes up to 12 inches) silique-like capsule, 3—6-angled, 1-locular, many-seeded, opening by 3 valves, rostrate with the persistent style. *Seeds* large, subglobose or 3-angled, 3-winged or wingless, with a crustaceous testa; endosperm 0.

Unarmed trees with gummy bark; leaves deciduous, alternate, 2—3-pinnate; pinnae and pinnules opposite; pinnules obovate or elliptic, entire; stipules 0 or represented by stipitate glands; flowers large, red or white, in axillary hairy panicles.

Genus 1; described species about 20, natives of Asia, Africa, and India.

3128

MORINGA Juss., Gen., p. 348 (1789)

Characters of the family.

One species widely spread in South West Africa; another species (?) recorded from the Zoutpansberg district of the Transvaal.

73. DROSERACEAE

Flowers bisexual. *Calyx* 4—5- (rarely 8-) partite, or sepals free, imbricate, persistent. *Petals* 5, more rarely 4—8, hypogynous, rarely epigynous, free or connate at the base, imbricate. *Stamens* 4—20, hypogynous or perigynous, very rarely epipetalous; filaments free or rarely connate at the base; anthers basifixed or versatile, 2-theous. *Ovary* superior or adhering to the base of the calyx, 1—5-chambered, with many, rarely 1, 2 or few, ovules in each chamber, with axile or parietal placentation; styles 1—5, filiform or club-shaped, simple, 2-fid, or multifid. *Fruit* a membranous or chartaceous capsule, 1—5-locular, opening by 2—5 valves, very rarely opening irregularly, many-seeded, rarely each loculus 1-seeded. *Seeds* sometimes pendulous, often minute, with the testa sometimes sculptured; embryo straight; endosperm fleshy.

Perennial herbs, rarely undershrubs, dwarf or elongated, often glandular-pilose; leaves alternate, lax or crowded and rosulate, very rarely verticillate, petioled or sessile, entire, 2-fid, or pinnatifid, usually rolled in bud; flowers often large, fugacious; inflorescence various.

Genera 6, with over 100 species, natives of the temperate zone and tropics of both hemispheres.

- | | | | | |
|--|-----|----------------------------|-----|---|
| 1. Ovary 1-chambered; styles 2—5, free or almost so | ... | ... | ... | 2 |
| Ovary 3-chambered; style simple | ... | 3. <i>Roridula</i> Linn. | | |
| 2. A free-floating aquatic herb... | ... | 1. <i>Aldrovanda</i> Linn. | | |
| Terrestrial plants, sometimes found in marshy ground but not free-floating | ... | 2. <i>Drosera</i> Linn. | | |

3134 1. ALDROVANDA Linn., Sp. Pl., ed. 1, p. 281 (1753)

Sepals 5, joined at the base, imbricate. *Petals* 5, at first united into a cap. *Stamens* 5, filaments subulate; anthers broadly didymous. *Ovary* superior, sessile, subglobose, 1-chambered, with several ovules on 5 parietal placentas; styles 5, incurved-spreading, dilated and penicillate at the apex. *Capsule* subglobose, membranous, loculicidally 5-valved. *Seeds* somewhat ovoid, with a black crustaceous shining testa.

Floating diaphanous aquatic herb; stems simple or branched; leaves verticillate, spatulate, terminating in bristles and with glands on the surface of the lamina; flowers few, solitary, axillary.

Species 1, found in Europe, Asia, and Australia; in South Africa recorded from Bechuanaland. (Type: *A. vesiculosa* Linn.)

3136 2. DROSER Linn., Sp. Pl., ed. 1, p. 281 (1753)

Calyx-tube frequently shortly campanulate; lobes 4, 5, or 8. *Petals* 4, 5, or 8, free. *Stamens* as many as the petals and inserted with them; filaments linear, sometimes broadened behind the anther and forming a small cup at the apex. *Ovary* superior, 1-chambered, with numerous, very rarely few, ovules on 2—5 placentas; styles 2—5, free or connate at the base, sometimes divided deep down so that styles appear to be 6, arms simple or deeply 2-fid, or multifid; stigmas often spatulate. *Fruit* an oblong capsule, opening by 2—5 valves, many-seeded. *Seeds* minute.

Stemless or caulescent herbs, densely glandular with stipitate glands except on the petals; leaves alternate, often rosulate, sessile or petioled, rounded, spatulate, linear, sometimes peltate, sometimes, in the caulescent species, the old leaves persistent; stipules 0, or scarious and adhering to the base of the dilated petiole; flowers often large and showy, white or rosy, solitary or arranged in a raceme, cyme, or corymb.

Species over 150, widely spread except in the Pacific Islands; about 15 species in South Africa, extending from the Transvaal and Natal, through the coastal belt to Clanwilliam. (Type: *D. rotundifolia* Linn.)

3138 3. RORIDULA Linn., Gen., ed. 6, p. 567 (1764)

Calyx 5-partite. *Petals* 5, usually obovate or oblong-obovate. *Stamens* 5, hypogynous; filaments linear; anthers with the thecae separated at the apex, with a dark swelling at the base. *Ovary* superior, 3-chambered, with 1—2 pendulous ovules in each chamber, glandular; style simple, sometimes broadening above; stigma capitate. *Fruit* a 3-angled 3-locular 3-seeded capsule, opening by 3 valves. *Seed* oblong in outline, with a sculptured testa.

Suffruticose herbs, glandular-pilose; leaves linear or subulate or lanceolate, entire or pinnatifid; inflorescence a simple or spicate raceme; flowers large, white or rosy; bracts 2.

Endemic; species 2, known from the Clanwilliam and Tulbagh districts. (Type: *R. dentata* Linn.)

NOTE.—The genus *Roridula* is an anomalous one. It has, with the Australian genus *Byblis* Salisb., been kept as a tribe *Roriduleae* of the family *Droseraceae*. The differences between *Roridula* and *Drosera* are so great that in any natural system of classification the two genera cannot be placed in the same family. Diels and Engler have referred the genus to the family *Ochnaceae*. Hutchinson (*Families of Flowering Plants*, p. 158) has followed Domin and placed *Roridula* and *Byblis* in a separate family *Byblidaceae* related to the families *Pittosporaceae* and *Tremanadaceae*.—E. P. P.

74. PODOSTEMACEAE

Flowers bisexual, sometimes enclosed in an irregularly bursting spathe. *Perianth* 3-partite or perianth-segment 2 and minute, sometimes zygomorphic. *Stamens* 1—4; filaments free or sometimes connate at the base or connate to the apex. *Staminodes* sometimes present. *Ovary* superior, 3-chambered, rarely 1-chambered by the absorption of the septa, sometimes on a gynophore; styles 2—3; stigmas sometimes sessile, sometimes decurrent on the inner face of the style. *Ovules* numerous, with axile and parietal placentation, sometimes with a narrow marginal wing. *Fruit* a capsule, crustaceous, sometimes ribbed, 2—3-valved, dehiscing septicidally or septifragally, often ribbed.

Submerged herbs of various habit, often resembling mosses, liverworts, or algae; leaves small, sessile, entire, sometimes dichotomously divided into very narrow segments or lacinate, sometimes radical; flowers terminal or axillary, solitary or arranged in umbellate cymes or cymes unilateral; pedicels sometimes stiffly erect with 3 bracts at the base.

Genera about 22, with about 130 species found chiefly in the tropics and subtropics of the southern hemisphere.

- | | | |
|---|-----------------------------------|---|
| 1. Perianth equally 3-partite | 1. <i>Tristicha</i> Thouars | |
| Perianth of 2 small linear segments... | ... .. | 2 |
| 2. Filaments united below; valves of capsule equal | | |
| | 2. <i>Dicraea</i> Thouars | |
| Filaments united to the apex; valves of capsule unequal | 3. <i>Sphaerothylix</i> Bischoff. | |

3140 1. TRISTICHA. Thouars, Gen. Nov. Madag., p. 3 (1806)

Flowers bisexual. *Perianth* 3-partite, membranous; segments oblong, obtuse, slightly imbricate. *Stamen* 1, hypogynous; filament long; anther oblong. *Ovary* oblong in outline, 3-chambered; styles 3, short, linear; stigmas decurrent on the inner side of the styles. *Ovules* numerous, with axile placentation. *Fruit* an oblong crustaceous capsule, 3-valved, dehiscing septicidally and septifragally.

Herbs with a moss-like habit, growing under water and attached to rocks by a flat lobed thallus; stem slender, much-branched; leaves small, sessile, entire, pellucid, 1-nerved; flowers terminal or axillary; pedicels stiffly erect, each with 3 bracts at the base.

Species about 7, natives of Africa, the Mascarene Islands, India, South America and the Philippine Islands; 2 species in South Africa recorded from the northern Transvaal. (Type: *T. alternifolia* Thours)

3151 2. DICRAEA Thouars, Gen. Nov. Madag., p. 2 (1806)

Flowers bisexual, at first enclosed in a spathe. *Perianth-segments* 2, minute, linear. *Stamens* 2; filaments united below; anthers ovate, 2-theous, dehiscing longitudinally. *Ovary* ellipsoid, sessile or subsessile, ribbed,

2-chambered; stigmas 2, free, short, terete or compressed. *Ovules* many. *Fruit* an ellipsoid 8—12-ribbed capsule, 2-locular; valves 2, equal.

Submerged herbs; stems elongate, rarely frond-like, branched or subsimple; leaves radical and cauline; radical leaves variable; cauline leaves scale-like; flowers terminal on short branchlets.

Species about 13, natives of Africa, the Mascarene Islands, and India; 1 species in South Africa, recorded from the Bechuanaland Protectorate.

3159 **3. SPHAEROTHYLAX** Bischoff ex Krauss, in *Flora*, vol. 27, p. 426, t. 1 (1844)

Flowers bisexual, subtended by 2 minute scales, or scales absent. *Stamens* 2; filaments connate to the apex; anthers 2, sessile at the top of the staminal-column, 2-theous, or anthers solitary and 4-theous with longitudinal dehiscence. *Staminodes* 2, small, linear. *Ovary* ovoid, 8-ribbed, sessile or subsessile; stigmas 2, short, lanceolate, sessile. *Ovules* many. *Fruit* an ovoid capsule, splitting into 2 unequal valves; the larger persistent; the smaller deciduous. *Seed* ellipsoid, compressed.

Aquatic herbs; stems slender and branched, arising from a Marchantia-like base; leaves elongated, lacinate; spatellae produced both on the thallus and on the elongated stems.

Species 11, natives of Africa and Madagascar; 2 species in South Africa, recorded from Natal, Tembuland, and the northern Transvaal. (Type: *S. algiformis* Bisch.)

75. HYDROSTACHYACEAE

Plants dioecious. *Perianth* 0. *Stamen* 1; anthers 2-theous. *Ovary* 1-chambered, with numerous ovules on 2 perietal placentas; styles 2, divergent. *Fruit* a small capsule. *Seeds* many; endosperm 0.

Submerged fresh-water herbs; stem tuberous; leaves simple, large, 2—3 times pinnatisect; with a sheath and ligule at the base; inflorescence a dense spike; flowers in the axil of a bract.

Genus 1; species about 16, natives of Africa and Madagascar.

3160 **HYDROSTACHYS** Thouars, Gen. Nov. Madag., p. 2 (1806)

Characters of the family.

One species occurs in Natal.

NOTE.—Both the *Flora Capensis* and the *Flora of Tropical Africa* place the genus in the family Podostemaceae.—E. P. F.

76. CRASSULACEAE

Flowers bisexual. *Calyx* persistent, usually 3—5-partite, sometimes united to form a tube. *Petals* as many as the sepals, free or more or less connate, often persistent, erect or spreading, or with an erect claw and a spreading limb. *Stamens* as many as or twice as many as the petals, often in 2 rows, usually free, affixed to the base of the petals or to the corolla-tube; filaments short or long, usually linear; anthers 2-theous, with introrse dehiscence. *Glands* at the base of each carpel or confluent with them, oblong, cuneate, linear, or round, rarely longer than broad, very rarely petaloid, rarely 0. *Gynaecium* of free carpels, very rarely carpels joined to form a 4-chambered ovary (*Pagella* Schönl.); carpels as many as the petals, free or united at the base, with usually many ovules in each ovary, rarely ovules few or 1—2;

styles evident or almost 0; stigma simple or capitate, usually terminal, rarely dorsal. *Fruit* of free follicles, very rarely a 4-locular capsule, many-seeded. *Seeds* very often minute; embryo terete; endosperm fleshy.

Herbs or undershrubs, more rarely aquatic, differing greatly in habit, often fleshy or succulent; leaves opposite or alternate, frequently in basal rosettes, frequently the leaves of each pair connate at the base, simple, or rarely cut or pinnate; stipules 0; flowers very often in cymes; bracts present or absent.

Genera 16, with over 400 species, chiefly natives of temperate Europe, Asia, South Africa, many in North America, rare in South America and Australia.

- | | | |
|---|-------------------------------|---|
| 1. A diminutive succulent leafless aquatic, with club-shaped stem and branches | 6. <i>Rhopalota</i> N. E. Br. | |
| Plants not as above | | 2 |
| 2. Carpels forming a 4-chambered ovary | 7. <i>Pagella</i> Schönl. | |
| Carpels free | | 3 |
| 3. Calyx membranous and inflated, usually 4-angled | | |
| | 2. <i>Bryophyllum</i> Salisb. | |
| Calyx not inflated | | 4 |
| 4. Style with decidedly dorsal stigmas... | 5. <i>Dinacria</i> Harv. | |
| Stigmas terminal | | 5 |
| 5. Petals free or connate at the base only; stamens 3—5, inserted at the base of the petals | 4. <i>Crassula</i> Linn. | |
| Corolla-segments joined to form a distinct tube; stamens inserted on the tube... .. | | 6 |
| 6. Corolla-lobes twisted in old flowers; stamens 8 | | |
| | 3. <i>Kalanchoe</i> Adans. | |
| Corolla-lobes not twisted in old flowers | | 7 |
| 7. Leaves very prominently connate at the base; stamens 5 | | |
| | 9. <i>Rochea</i> DC. | |
| Leaves not very distinctly connate at the base; stamens 10, if 5—6 then small dichotomously branched herbs | | 8 |
| 8. Small dichotomously branched herbs; stamens 5—6 | | |
| | 8. <i>Grammanthes</i> DC. | |
| Not dichotomously branched herbs; stamens 10 | | 9 |
| 9. Inflorescence a cyme | 1. <i>Cotyledon</i> Linn. | |
| Inflorescence a spike or raceme | 10. <i>Adromischus</i> Lem. | |

3164 1. COTYLEDON Linn., Sp. Pl., ed. 1, p. 429 (1753)

Calyx 5-partite, equalling or shorter than the tube of the corolla. *Corolla-tube* usually wide, urceolate or cylindric, terete or 5-angled; limb spreading or reflexed, spirally twisted in the bud. *Stamens* 10, very rarely 5, inserted on the corolla near the base; filaments filiform, short or elongated, frequently broadened at the base; anthers oblong, exserted or included. *Glands* linear, oblong, or quadrate, sometimes broader than long. *Gynaecium* of 5 free carpels, each narrowed into a filiform or subulate style; ovules many in each ovary; stigmas obliquely capitate. *Fruits* of separate follicles, many-seeded.

Herbs or more or less fleshy undershrubs of various habit; leaves opposite, sessile or petioled, usually fleshy; flowers erect or pendulous, varying from small to large, sometimes showy, usually arranged in cymes.

A genus of about 150 species, natives of western and southern Europe, Africa, eastern Asia, the Himalaya, and Mexico; almost 50 species in South Africa with a wide distribution. (Type: *C. orbiculata* Linn.)

3165 2. BRYOPHYLLUM Salisb., *Parad. Lond.*, t. 3 (1805)

Calyx-tube membranous, inflated, broadly tubular; lobes short, valvate. *Corolla* slightly longer than the calyx; tube tubular, ventricose at the base; limb shortly 4-fid, spreading. *Stamens* 8, in 2 rows; inserted on the corolla-tube; filaments linear; anthers oblong, shortly exserted. *Glands* 4, oblong, free or united to the carpels. *Gynaecium* of 4 free carpels, or carpels connate at the base; ovules many in each ovary; styles elongated, almost as long as the calyx; stigmas simple. *Fruit* of 4 free follicles; each follicle many-seeded.

Succulent undershrubs; leaves opposite, petioled, simple, often with crenate margins, sometimes imparipinnate; flowers large, nodding, arranged in many-flowered paniculate cymes.

Species 5, natives of tropical Africa, with 1 species widely dispersed; 1 species recorded from the Transvaal and the eastern districts of the Cape Province.

3166 3. KALANCHOE Adans., *Fam.*, vol. 2, p. 248 (1763)

Calyx 4-partite almost to the base, much shorter than the corolla; segments linear, ovate, or subulate. *Corolla* usually membranous, especially with age, persistent; tube usually tubular, sometimes 4-angled, ventricose at the base; lobes 4, usually twisted in old flowers. *Stamens* 8, in 2 rows, adnate to the corolla-tube, sometimes low down, sometimes in the mouth and throat; filaments distinct; anthers mostly suborbicular, sometimes with a small apical appendage. *Glands* 4, mostly linear, sometimes oblong. *Gynaecium* of 4 carpels, adnate to the base of the corolla-tube; carpels linear-lanceolate in outline, attenuated into the subulate styles or abruptly passing into the styles, with many ovules in each ovary; stigmas obliquely truncate. *Fruit* of 4 membranous carpels, many-seeded.

Herbs or robust undershrubs; leaves opposite, fleshy, sessile or petioled, entire, crenate, or pinnatifid; flowers usually medium-sized, sometimes large, arranged in many-flowered paniculate cymes.

Described species over 200, natives of Asia, Africa, Madagascar, Arabia, and Brazil; 20 described from South Africa, extending from the Transvaal and Natal, through the coastal belt to Riversdale; also found in Namaqualand and South West Africa, rare in the central districts.

3168 4. CRASSULA Linn., *Sp. Pl.*, ed. 1, p. 429 (1753)

(*Bulliarda* DC.; *Helophytum* E. & Z.)

Calyx 3—5-partite or -fid; lobes erect or spreading. *Petals* 3—5, rarely 6—9, free or connate at the base, erect or spreading, sometimes with a more or less blunt mucro behind the apex. *Stamens* 3—5, shorter or as long as the petals, inserted at the base of the petals; filaments linear; anthers oblong or elliptic. *Glands* various. *Gynaecium* of 3—5, rarely more, free carpels; carpels sometimes keeled and ciliated or pectinate, each attenuated into a very short or evident style; ovules usually many in each ovary, more rarely few or 1—2. *Fruit* of 3—5, rarely more, follicles. *Seeds* 1 to many.

Herbs or shrubs, rarely aquatic, of very diverse habit, glabrous or variously glandular or pilose in the several parts; leaves opposite, rarely petioled, often connate and decussate, fleshy, entire or with cartilaginous-ciliated margins, glabrous, pubescent, or scaly, sometimes rosulate, sometimes closely packed on the stem and forming a more or less 4-angled plant body, sometimes very fleshy and closely packed; flowers usually somewhat small, white, rosy, rarely yellow,

often arranged in loose cymes, rarely in heads or simple umbels, sometimes in sessile globose cymules on an elongated peduncle.

Species over 300, mostly South African, a few in tropical Africa, Abyssinia, and the Himalaya; in South Africa widely distributed. (Type: *C. perfoliata* Linn.)

3168a **5. DINACRIA** Harv., in Harv. & Sond. Fl. Cap., vol. 2, p. 330 (1862)

Calyx deeply 5-partite; segments ovate or oblong. *Petals* 5, subconnate at the base, slightly longer than or twice as long as the calyx, oblong. *Stamens* 5, shorter than the petals and affixed to them at the base; filaments linear, sometimes very short; anthers ovate, apiculate. *Glands* 5, spathulate. *Gynaecium* of 5 free carpels, with few ovules in each ovary; carpels sometimes with a few projections on the edges; style almost none or produced into a membranous appendage; stigma dorsal, truncate. *Fruit* of few-seeded carpels. *Seeds* globose.

Dwarf annual herbs with trichotomous branches and distant nodes; leaves opposite, somewhat fleshy, obovate or oblong, obtuse; flowers small, white, in cymes arranged in corymbose clusters.

Endemic; species 3, extending from the Cape Peninsula to the districts of Uitenhage and Albany. (Type: *D. filiformis* (E. & Z.) Harv.)

3168b **6. RHOPALOTA** N. E. Br., Cactus & Succ. Journ., vol. 3, p. 7 (1931)

Calyx-lobes usually 4, rarely 3, very short, much broader than long. *Petals* usually 4, rarely 3, alternating with the calyx-lobes and longer than them, sometimes reflexed. *Stamens* 4, rarely 3, alternating with the petals, slightly exceeding the apex of the carpels. *Glands* opposite the petals, conspicuous, arising above the top of the carpels. *Carpels* usually 4, immersed in the calyx-tube, free, truncate at the apex; styles very short; ovule solitary in each ovary.

A diminutive perennial succulent leafless aquatic herb; stem and branches club-shaped; flowers solitary, terminal.

Endemic; species 1, recorded from the Clanwilliam district. (Type: *R. aphylla* (Schonl. & Bkr.) N. E. Br.)

3168c **7. PAGELLA** Schonl., Ann. Bolus Herb., vol. 3, p. 67 (1921)

Sepals 4, small, connate at the base, similar to the leaves but smaller, papillose at the apex. *Petals* 4, longer than the sepals, persistent, connate at the base, broadly obovate-cuneate, suberect, incurved at the apex, microscopically papillose. *Stamens* 4, in 1 row, alternating and shorter than the petals; filaments incurved; anthers dorsifixed, oblong. *Ovary* 4-chambered, depressed, flat above, with a deep cavity in the middle, microscopically papillose; ovules many in each chamber; styles free, minute; stigmas minute, oblong. *Glands* a little longer than the ovary, narrowly linear, slightly dilated at the apex. *Fruit* a many-seeded capsule.

A small, almost flat, annual herb, with the general appearance of a liverwort; primary stem obconic and then disc-like, densely covered with leaves and flowers; leaves numerous at the margin of the disc, in a dense rosette, small, fleshy; the lower cuneate, subflat, pale green; the upper deep green, larger and thickened, obliquely truncate, papillose; inflorescence many-flowered, on the flat top of the stem; flowers sessile; bracts resembling the leaves but much smaller.

Endemic; species 1, only recorded from the Montagu and Worcester districts. (Type: *P. archeri* Schonl.)

3170 8. GRAMMANTHES DC., Prodr., vol. 3, p. 392 (1828)

Calyx-tube campanulate; lobes broadly oblong, roughly crenate. *Corolla-tube* about equalling the calyx; lobes 5—6, ovate-lanceolate. *Stamens* 5—6, affixed to the corolla-tube; filaments linear; anthers elliptic. *Glands* small, linear. *Gynaecium* of 5—6 3-angled carpels, each attenuated into a subulate style; stigmas somewhat capitate; ovules many in each ovary. *Fruit* of 5 free many-seeded follicles.

A small rigid annual herb, dichotomously branched, glabrous and somewhat glaucous; leaves fleshy, opposite, oblong or linear, entire; flowers yellow or golden, in paniculate cymes.

Endemic; species 1, typically of the south-western districts of the Cape Province and extending to the Mossel Bay district; also recorded from Namaqualand and Basutoland. (Type: *C. gentianoides* (Lam.) DC.)

3171 9. ROCHEA DC., Pl. Hist. Succ., t. 103 (1806?)

Calyx 5-parted or deeply 5-cleft. *Corolla-tube* tubular, usually longer than the calyx; lobes 5, spreading. *Stamens* 5, inserted in the throat of the corolla-tube; filaments linear, long or sometimes shorter than the anthers; anthers oblong. *Glands* small. *Gynaecium* of 5 free carpels; styles free or all or some connate, usually longer than the corolla-tube and somewhat thickened above; stigmas somewhat capitate or obliquely truncate. *Fruit* of 5 many-seeded follicles.

Fleshy shrublets; leaves opposite, connate at the base, oblong, obovate, or lanceolate, with cartilaginous ciliated margins; flowers large, white, yellow, rosy, or scarlet, in cymes arranged in corymbose heads.

Endemic; species 4, typically of the south-western districts of the Cape Province; 1 species found on the Cockscombe Mountains, also recorded from the Zwartberg Pass, Prince Albert district. (Type: *R. coccinea* (L.) DC.)

3175 10. ADROMISCHUS Lemaire, Jard. Fleur., vol. 2, Misc., p. 59 (1852)

Calyx-segments stiff, ovate, acute. *Corolla-tube* cylindric, several times longer than the calyx, sometimes angled; lobes short. *Stamens* 10, in 2 rows; the upper as long as the corolla-tube or shorter; anthers oblong or elliptic. *Glands* quadrate or oblong, usually 2-lobed. *Carpels* as long as the corolla-tube or much shorter; styles distinct or almost 0; stigmas simple or capitate. *Fruit* of many-seeded follicles.

More or less fleshy plants, sometimes with a distinct stem or almost stemless; leaves alternate and usually closely crowded though occasionally loosely scattered along the stem or its branches, rarely subrosulate or leaves opposite and decussate, flattened, terete, or semi-terete; inflorescence spicate or racemose, with the flowers arranged in 1—3-flowered cymes.

Endemic; species 28, widely distributed. (Type: *A. hemisphaericus* (Linn.) Lem.)

77. SAXIFRAGACEAE

Plants sometimes dioecious. *Flowers* bisexual, more rarely unisexual or bisexual with occasional unisexual flowers. *Calyx* usually of 5 sepals, sometimes 4, with the tube adnate to the ovary. *Petals* usually 5, more rarely 4, free or sometimes connate, rarely 0; imbricate or valvate. *Stamens* as many or twice as many as the petals, perigynous or epigynous. *Ovary* superior or inferior, 1—7-chambered, with many ovules on parietal or axile placentas;

styles simple, or styles free and as many as the carpels. *Fruit* a capsule or berry. *Seed* with copious endosperm surrounding a small embryo, rarely endosperm 0.

Perennial herbs, shrubs, or trees; leaves usually alternate, more rarely opposite; stipules rarely present; inflorescence various, racemose or cymose.

Genera 75, with about 600 species, found chiefly in temperate regions.

1. Leaves opposite	...	...	...	1. <i>Vahlia</i> Thunb.	
Leaves alternate	...	...	...	...	2
2. Leaves entire	...	...	...	2. <i>Montinia</i> Thunb.	
Leaves serrated	...	...	...	3. <i>Choristylis</i> Harv.	

3201 1. VAHLIA Thunb., Nov. Gen. Pl., vol. 2, p. 36 (1782)

Calyx-lobes 5, ovate or lanceolate, valvate. *Petals* 5, obovate or obovate-spathulate, shorter than the calyx-lobes. *Stamens* 5, inserted on the margin of an epigynous disc; filaments linear; anthers oblong. *Ovary* inferior, 1-chambered, with numerous ovules on placentas pendulous from the apex of the chamber; styles 2, rarely 3, short or elongated; stigmas somewhat capitate. *Fruit* a subglobose or obovoid capsule, 2- (rarely 3-) valved at the apex, many-seeded. *Seeds* minute, oblong in outline.

Herbs, often glandular, pubescent, subdichotomously branched; leaves opposite, entire; stipules 0; flowers yellow or white, pedicelled or subsessile, axillary, 2-nate.

Species 9, natives of Africa, tropical and subtropical Asia; 3 species in South Africa, found in the Transvaal, the Orange Free State, the north-western districts, and South West Africa. (Type: *V. capensis* Thunb.)

3238 2. MONTINIA Thunb., Phys. Saellsk. Handl., vol. 1, p. 108 (1776)

Plants dioecious. *Male flowers*:—*Calyx-tube* shortly 4-lobed, persistent. *Petals* 4—5, fleshy, rounded, imbricated, deciduous. *Stamens* 4—5, inserted on the margin of the disc, alternating with the petals; filaments linear, shorter than the anthers; anthers oblong. *Disc* basin-shaped. *Rudimentary ovary* 0. *Female flowers*:—*Calyx-tube* adnate to the ovary; limb very short, 4-angled. *Petals* as in the male. *Stamens* 0. *Disc* epigynous, somewhat thick, 4-angled. *Ovary* inferior, ellipsoid, imperfectly 2-chambered, with many ovules in 2 rows on an axile placenta; style short, thick; stigma divided into 2 horseshoe-shaped thick lobes. *Fruit* a subwoody ellipsoid capsule, 1-locular, opening by 2 valves, with the seeds on a free-central placenta; placenta somewhat fleshy, elliptic, 2-lobed above. *Seed* compressed, imbricate, with a broad marginal wing; testa pustulate; cotyledons orbicular, flat; endosperm 0.

A glabrous shrub, with furrowed branches and distinct lenticels; leaves alternate, shortly petioled, coriaceous, elliptic or lanceolate; flowers small, white; the male flowers in terminal few-flowered corymbs; the female flower solitary.

Endemic; species 1, extending from South West Africa, through the coastal belt to the Port Elizabeth district and dry localities in the Albany district. (Type: *M. caryophyllacea* Thunb.=*M. acris* Linn. fil.)

3241 3. CHORISTYLIS Harv., in Hook. London Journ. Bot., vol. 1, p. 19 (1842)

Flowers bisexual with occasional unisexual flowers. *Calyx-lobes* 5, subulate, persistent. *Petals* 5, valvate, persistent, inserted on the margin of the calyx-tube, longer than the calyx-lobes, ovate-deltoid, pubescent. *Stamens* 5,

alternating with the petals and inserted with them; filaments shorter than the petals, subterete, broadened at the base, villous; anthers ovate, about $\frac{1}{2}$ as long as the filaments, villous. *Ovary* inferior, 2-chambered, with many ovules on axile placentas; styles 2, erect, at length somewhat recurved; stigmas subglobose. *Fruit* a semi-superior capsule, 2-locular, many-seeded, opening septically through the persistent styles. *Seeds* small, more or less half-moon-shaped; testa black, sculptured.

A shrub or small tree, sometimes scandent; leaves alternate, petioled, ovate-oblong or elliptic, with toothed margins; stipules 0; flowers white or pale green, small, arranged in panicles shorter than the leaves.

Endemic; species 1, extending from the northern Transvaal, through Natal and the coastal belt to the Victoria East district. (Type: *C. rhamnoides* Harv.)

78. PITTOSPORACEAE

Flowers bisexual, regular or a little oblique. *Sepals* 5, distinct, imbricate or rarely connate at the base. *Petals* 5, imbricate, longer than the sepals, with the claws, when present, often more or less connate into a tube. *Stamens* 5, hypogynous, free, alternating with the petals; filaments linear, sometimes dilated at the base or middle; anthers versatile, 2-theous. *Receptacle* small, conical or rarely produced into a short gynophore or 5-glands or 0. *Ovary* superior, 1-chambered or incompletely 2—5-chambered, with many ovules on parietal placentas or in 2 rows on a central placenta or ovules few; style simple; stigma minute or dilated, entire or minutely toothed. *Fruit* a capsule or indehiscent, sometimes succulent. *Seeds* many, rarely solitary or few, without appendages; embryo minute; endosperm hard.

Shrubs or trees or climbers; leaves alternate or whorled, entire, toothed or rarely slightly cut; stipules 0; inflorescence a corymb or panicle or flowers axillary, solitary and drooping on terminal or axillary pedicels, or flowers fascicled.

Genera 9; species about 300, found in all warm countries, absent from America.

3252 **PITTOSPORUM** Banks, ex Gaertn. Fruct., vol. 1, p. 286, t. 59 (1788)

Sepals distinct or connate at the base. *Petals* free or cohering into a tube at the base or beyond the middle. *Stamens* about as long as the petals; filaments linear; anthers erect, ovate-oblong. *Ovary* sessile or shortly stalked, more or less perfectly 2- (rarely 3—5-) chambered; ovules sometimes about 6; style sometimes conical; stigma simple. *Fruit* a globose, ovoid, or obovoid capsule, often with only a few seeds; valves often 2, coriaceous or subwoody, sometimes each valve tipped with $\frac{1}{2}$ the style which has split longitudinally. *Seeds* sometimes reddish and convex on one side and 3—4-angled on the other side; endosperm horny.

Trees or shrubs; leaves usually petioled, entire or sinuate-toothed, sometimes subwhorled at the apex of the branches; inflorescence terminal, corymbose, subumbellate, or paniced, or flowers solitary or few and terminal, axillary, or lateral.

Species about 236, natives of Africa, Asia, the Pacific Islands, Australia, and New Zealand; 2 species in South Africa, extending from the Transvaal and Natal, through the eastern districts to the Riversdale district.

79. CUNONIACEAE

Plants sometimes dioecious. *Sepals* 4—5, free or sometimes united at the base, imbricate or valvate. *Petals* 3—5, rarely 6—9, usually smaller than

the calyx, often absent, imbricate, entire or toothed or 3-lobed. *Stamens* free, 8—10 or many, inserted beneath the disc; anthers 2-theous. *Disc* often annular. *Ovary* superior, 2—5-chambered or rarely of free carpels; ovules 2 to many in each ovary or ovary-chamber, axile or apical; styles usually free; stigmas simple. *Fruit* a capsule, rarely a drupe or nut. *Seed* various, sometimes winged, glabrous or long pilose; embryo small, straight; endosperm present.

Trees or shrubs; leaves mostly opposite or rarely whorled, trifoliolate or pinnate, rarely simple, usually with serrated margins; stipules sometimes large and united in pairs within the petioles; flowers rarely solitary, usually in heads, racemes or panicles.

Genera 20, with about 117 species, natives of the Fiji Islands, New Caledonia, Australia, South America, Tasmania, New Zealand, Madagascar, and Africa.

Flowers in long-peduncled axillary panicles; ovules 2 in each ovary-chamber 1. *Platylophus* Don

Flowers in dense spike-like racemes; ovules numerous in each ovary-chamber 2. *Cunonia* Linn.

3269 1. *PLATYLOPHUS* D. Don, in Edinb. New Phil. Journ., vol. 9, p. 92 (1830)

Calyx-tube very short, adnate to the base of the ovary; lobes valvate, 4—5, triangular-ovate, persistent. *Petals* 4—5, inserted at the base of the disc, shorter than the calyx, 3-fid or 3-toothed. *Stamens* 8—10, inserted on the rim of the disc; filaments about as long as the calyx; anthers didymous, 2-theous. *Disc* thick, saucer-shaped. *Ovary* superior, 2-chambered, with 2 collateral ovules below the apex of each chamber, shortly villous; styles 2, subulate, recurved at the apex; stigmas simple. *Fruit* a turgid capsule, flattened and narrowed above, tipped with the persistent styles, 2-locular, 2-seeded, at length opening by 2 valves. *Seed* oblong in outline, curved; endosperm present.

A large umbrageous tree, glabrous in all parts; leaves opposite, petioled, coriaceous, 3-foliolate; leaflets lanceolate, acute, shortly toothed on the margins; stipules small, acuminate, deciduous; flowers small, in long-peduncled many-flowered axillary panicles.

Endemic; species 1, only known from the coastal belt between the Swellendam and Uitenhage districts. (Type: *P. trifolius* D. Don)

3275 2. *CUNONIA* Linn., Syst., ed. 10, p. 1025 (1759)

Calyx-tube short, in the South African species saucer-shaped; lobes 5, imbricate, persistent. *Petals* 5, much longer than the calyx, oblong, imbricate. *Stamens* 10, inserted with the petals and longer than them; filaments linear; anthers didymous, 2-theous. *Disc* adnate to the ovary, inconspicuous in the South African species. *Ovary* superior, 2-chambered, with numerous axile pendulous ovules in 2 rows; styles 2, terete; stigmas simple. *Fruit* a 2-horned 2-locular coriaceous capsule, opening by 2 valves. *Seed* oblong or lanceolate in outline, with a narrow membranous wing; endosperm fleshy.

Trees or shrubs; leaves opposite, petioled, 3-foliolate or imparipinnate; leaflets 2—3-jugate, lanceolate, obtuse, sometimes shortly acuminate, with serrated margins; stipules large, oblong, caducous; flowers in densely many-flowered spike-like racemes.

Species 17, natives of New Caledonia; 1 species in South Africa, extending from Zululand, through the coastal belt to the Worcester district. (Type: *C. capensis* Linn.)

80. MYROTHAMNACEAE

Plants dioecious. *Perianth* 0. *Male flowers*:—*Stamens* 4—8, often 5; filaments connate; anthers basifixed, 2-theous, opening by longitudinal slits, with the connective produced into a short beak. *Rudimentary ovary* 0. *Female flowers*:—*Staminodes* 0. *Ovary* superior, sessile, obtusely 3-lobed, usually 3-chambered, sometimes 4—6-chambered, with numerous ovules in 2 rows on the inner angles of the chambers; styles 3—6, short; stigmas broadened, with crinkled margins. *Fruit* a small capsule or separating into as many parts as there are chambers in the ovary, many-seeded. *Seeds* minute, pendulous; embryo minute; endosperm present.

Balsamiferous shrub or undershrub; leaves opposite, folded fanwise, shortly petioled, articulated to the petiole; petiole adnate to the branches; stipules subspinescent, adnate to the petiole and with the petioles persistent; flowers in terminal spikes, each flower in the axil of a bract.

Genus 1; species 1.

3282 MYROTHAMNUS Welw., Apont. Phyto-geogr., p. 578 (1859)

Characters of the family.

Found in the Transvaal and Natal, and South West Africa; also found in Rhodesia, Angola, Portuguese East Africa, and Tanganyika. (Type: *M. flabellifolia* Welw.)

81. BRUNIACEAE

Flowers bisexual, regular. *Calyx-tube* often obconic, hollowed out, often ribbed, usually adnate to the ovary; lobes 5, rarely 4, sometimes scarious. *Petals* 5, perigynous or epigynous, sessile or clawed, often with a thickening at the base within, often persistent, rarely petals joined to form a distinct tube. *Stamens* inserted with the petals and alternating with them, free or adnate to the base of the petals, in gamopetalous flowers inserted in the corolla-throat; filaments linear; anthers oblong, ovate, or linear, 2-theous, with the thecae sometimes diverging. *Ovary* often semi-inferior, rarely inferior or almost superior, 1—2- (rarely 3-) chambered, with 1—10 pendulous ovules in each chamber; style simple, sometimes 2-fid, or styles free; stigma usually minute. *Fruit* indehiscent or often 2-coccus; seed oblong, pendulous; embryo minute; endosperm copious, fleshy.

Shrubs or undershrubs, often heath-like, with the branches often densely leafy; leaves usually small, spirally densely imbricate, rarely sparse, sessile or shortly petiolate, needle-like, linear, oblong, ovate, or lanceolate, flat or 3-angled; stipules 0; flowers very often small, axillary or terminal or arranged in globose or flat heads, rarely in spikes or panicles; bracts often 3, longer or shorter than the flowers.

Genera 12, with about 75 species, all endemic, mainly confined to the southwestern districts of the Cape Province.

- | | | | | | | |
|--|-----|-----|-----|-----|-----|---|
| 1. Ovary 1-chambered, with a single ovule | ... | ... | ... | ... | ... | 2 |
| Ovary usually 2-chambered, rarely 3-chambered, with 1 or more ovules | | | | | | |
| in each chamber, more rarely with only 1 ovule developed | ... | ... | ... | ... | ... | 3 |

2. Flowers arranged in heads; stamens much longer than the petals

12. *Bergelia* Brongn.

Flowers axillary; stamens shorter than the petals

11. *Mniothamnus* Niedenzu

- | | | |
|---|----------------------------------|----|
| 3. Petals connate into a tube | 4. <i>Lonchostoma</i> Wikstr. | |
| Petals free, sometimes connate at the base but not forming a distinct tube (see 1 species <i>Brunia</i>) | | 4 |
| 4. Ovary 3-chambered | 1. <i>Audouinia</i> Brongn. | |
| Ovary 2-chambered | | 5 |
| 5. Petals large and conspicuous | | 6 |
| Petals small, scarcely conspicuous | | 7 |
| 6. Petals thin, distinctly clawed | 2. <i>Thamnea</i> Soland. | |
| Petals hard and chartaceous... .. | 5. <i>Linconia</i> Linn. | |
| 7. Bracts prominent, conspicuous in the head | | 8 |
| Bracts not prominent and conspicuous | | 9 |
| 8. Bracts almost pungent | 7. <i>Nebelia</i> Neck. | |
| Bracts more or less obtuse | 8. <i>Staavia</i> Dahl. | |
| 9. Flowers in the axils of the upper leaves | 3. <i>Tittmannia</i> Brongn. | |
| Flowers in heads, racemes, or panicles, rarely solitary and axillary, but then leaves not small and closely imbricated | | 10 |
| 10. Stamens longer than the petals | 10. <i>Brunia</i> Linn. | |
| Stamens shorter than the petals | | 11 |
| 11. Leaves very small, densely imbricated and appressed, usually silky | 6. <i>Raspalia</i> Brongn. | |
| Leaves not as above | | 12 |
| 12. Bracts usually conspicuous | 8. <i>Staavia</i> Dahl. | |
| Bracts not conspicuous | 9. <i>Pseudobaeckia</i> Niedenzu | |

3283 **1. AUDOUINIA** Brongn., in Ann. Sc. Nat., vol. 8, p. 384, t. 38 (1826)

Bracts at base of flower about 7, in 2—3 rows. *Sepals* 5, large, oblong-lanceolate, scarious, ciliate. *Petals* 5, longer than the sepals, free or slightly connate at the base, long clawed, with an ovate limb. *Stamens* 5, fixed outside the disc, shorter than the petals; filaments somewhat thick; anthers linear-oblong. *Disc* distinct, surrounding the top of the ovary, crenate on the margins. *Ovary* inferior, obconic, 3-chambered, with 2 collateral pendulous apical ovules in each chamber; styles columnar, as long as the stamens, 3-angled; stigmas free, hollow.

A low shrub resembling a heath; leaves ericoid, spirally imbricated, sessile, 3-angled; flowers in an oblong spike-like terminal head.

Species 1; confined to the south-western districts of the Cape Province. (Type: *A. capitata* Brongn.)

3284 **2. THAMNEA** Soland. ex R. Br., in Abel, Narr. Journ., p. 374 (1818)

Calyx-tube short, obconic, adnate to the ovary; lobes 5, elongate-lanceolate, scarious, much longer than the tube. *Petals* 5, large, long-clawed, free or slightly connate at the base; limb ovate, spreading. *Stamens* 5, included; filaments linear; anthers linear-oblong. *Ovary* inferior, 2-chambered, with 2—8 pendulous ovules from a central column; style rising abruptly from the more or less flattened top of the ovary, as long as the stamens, simple, cylindric; stigma obtuse. *Fruit* hard, crowned with the annular disc and style.

Undershrubs of ericoid habit; leaves very small, spirally imbricate; the upper forming an involucre round the flowers; flowers terminal, solitary, about 1 cm. or more long.

Species 7; confined to the south-western districts of the Cape Province. (Type: *T. uniflora* Soland.)

3285 3. TITTMANNIA Brongn., in Ann. Sc. Nat., vol. 8, p. 385 (1826)

Calyx-tube globose or obconic, adnate to the ovary, ribbed or verrucose; lobes 5, erect, lanceolate or lanceolate-oblong, about as long as the tube. *Petals* 5, free or slightly connate at the base, spathulate-oblong, obovate-lanceolate, or elliptic. *Stamens* 5, included; filaments linear or oblong. *Ovary* narrowed above and gradually passing into the style, 2-chambered, with 2 pendulous ovules in each chamber; septum thin or thick and almost filling the ovary-chambers; stigma obscurely 2-toothed. *Fruit* a nut, globose, crowned with the remains of the calyx and corolla.

Undershrubs of ericoid habit; leaves very small, spirally imbricated, obtuse or tipped with a black mucro; flowers few, in the axils of the upper leaves, usually about 3 mm. long.

Species 3—4, confined to the south-western districts of the Cape Province (Type: *T. laxa* (Thunb.) Presl)

3286 4. LONCHOSTOMA Wikstr., Vet. Acad. Handl. Stockholm, p. 350, t. 10 (1818)

Calyx-tube short, adnate to the base of the ovary; lobes 5, ovate or narrow and linear-oblong, usually obtuse, silky. *Corolla-tube* tubular, longer or shorter than the sepals; lobes usually 5, oblong-spathulate, spreading, longer than the tube. *Stamens* usually 5, inserted in the throat of the corolla-tube, rarely in the mouth; filaments usually shorter than the anthers, more rarely almost 0 or longer than the anthers; anthers oblong or linear, hastate, sometimes hairy. *Ovary* almost superior, normally 2-chambered, with 2—10 ovules in each chamber, rarely ovules solitary, sometimes villous; styles usually 2, rarely 1, shorter than the stamens; stigmas simple. *Fruit* a 2—4-valved capsule.

Virgate shrubs; leaves alternate, closely packed, sessile, ovate, elliptic, or oblong, obtuse, long ciliate, often tipped with a black apiculus; flowers in terminal leafy heads.

Species 4, confined to the south-western districts of the Cape Province. (Type: *L. obtusiflorum* Wikstr.=*L. pentandrum* (Thunb.) Druce)

3287 5. LINCONIA Linn., Mant., vol. 2, p. 216 (1767)

Calyx-tube short, adnate to the ovary; lobes 5, free and longer than the tube or joined to form a shallow basin shorter than the tube. *Petals* chartaceous, free or slightly connate at the base, lanceolate or oblong, much longer than the calyx. *Stamens* included, shorter than the petals; filaments dilated or linear; anthers cordate or sagittate, with the lower halves almost free. *Ovary* semi-superior, 2-chambered, with 2 ovules in each chamber; styles 2, as long as the stamens, erect; stigmas simple. *Fruit* 2-coccus, 1—2-seeded.

Heath-like shrubs, with erect fastigiate branches; leaves spirally imbricated, very shortly petioled, linear to ovate-oblong; flowers solitary in the axils of the upper leaves, the whole forming a crowded leafy spike; bracts 4—5.

Species 3, found in the south-western districts of the Cape Province and eastwards to the Humansdorp district. (Type: *L. alopecuroides* Linn.)

3288

6. *RASPALIA* Brongn., Ann. Sc. Nat., vol. 8, p. 377, tab. 37, fig. 1 (1826)

Calyx-tube short, obconic, adnate to the ovary or almost free; lobes about as long as the tube, oblong or lanceolate, often with a black mucro, usually hairy. *Petals* 5, slightly longer than the calyx-lobes, oblong or linear-oblong, not clawed. *Stamens* 5, shorter, very rarely longer, than the petals; filaments linear; anthers oblong or subglobose. *Ovary* superior or semi-inferior, 2-chambered, with 1, rarely 2 or 3—4, ovules in each chamber, usually villous; styles 2, shorter than the petals; stigmas simple. *Fruit* 2-coccus, 1-seeded.

Heath-like shrublets; leaves densely imbricated, appressed, usually silky; flowers in small globose or elongated heads; bracts leafy or absent.

Species 16, found in the south-western districts of the Cape Province, but extend to the Riversdale district. (Type: *R. microphylla* Brongn.)

3289

7. *NEBELIA* Neck., Elem., vol. 1, p. 113 (1790)

(*Berardia* Brongn.)

Calyx-tube adnate to the ovary at the base, usually produced above the ovary; lobes 5, narrow, often hairy. *Petals* 5, usually shorter than the calyx-lobes, narrowly oblong, free or connate at the base. *Stamens* 5, exserted; filaments linear; anthers oblong or subglobose. *Ovary* semi-inferior, 2-chambered, with a single pendulous ovule in each chamber; styles 2, filiform; stigmas simple. *Fruit* 2-coccus. *Seed* black, angled.

Undershrubs; leaves heath-like, appressed, subulate or linear, acute, usually incurved, glabrous or slightly hairy but not silky; flowers in broadly obconic globose or ovoid heads, often surrounded by the upper leaves; bracts scarious, prominent on the heads, often linear and pungent and much exceeding the flowers.

Species 6; mostly in the south-western districts of the Cape Province; also recorded from the George district. (Type: *N. paleacea* Sweet)

3290

8. *STAAVIA* Dahl, Obs. Bot., p. 15 (1787)

Calyx-tube obconic, adnate to the ovary, usually slightly produced above the ovary; lobes 5, linear, usually slightly longer than the petals. *Petals* 5, free or connate at the base, lanceolate or oblong, without claws, sometimes with a pouch at the base. *Stamens* 5, shorter than the petals; filaments linear; anthers ovate or oblong. *Ovary* semi-inferior, 2-chambered, with a solitary ovule in each chamber; style 1, very rarely 2; stigmas 2, simple or somewhat swollen. *Fruit* 2-coccus.

Heath-like undershrubs; leaves small, erect-spreading or recurved, linear, needle-like, or oblong; the upper leaves usually forming an involucre round the head; flowers small, 3 to many in a head; heads varying from about the size of a pea to 1½ inches diameter, sometimes glutinous or woolly; bracts often white and tipped with a black apiculus and longer than the flowers, sometimes shorter.

Species 10, massed in the south-western districts of the Cape Province, but extend as far as the Riversdale district. (Type: *S. radiata* Dahl)

3291

9. *PSEUDOBÆCKEA* Niedenzu, Engl. & Prantl Pflanzenfam., vol. 3, 2a, p. 136 (1891)

Calyx-tube adnate to the ovary and often produced slightly beyond the ovary, sometimes tuberculate; lobes often linear, sometimes oblong and obtuse, sometimes papery. *Petals* 5, obovate, slightly longer than the calyx-lobes, usually indistinctly tubercled below, sometimes with a small pouch. *Stamens* 5, shorter than the petals; filaments linear; anthers subglobose.

Ovary inferior, villous or glabrous, 2-chambered, with 1—2 ovules in each chamber, sometimes only 1 ovule developed; style simple or styles 2; stigmas simple.

Ericoid undershrubs; leaves linear, lanceolate, or ovate; flowers small, in heads, racemes, or panicles, rarely solitary and axillary.

Species 4; mostly in the south-western districts of the Cape Province, but extend into the George, Knysna, Humansdorp, and Uitenhage districts. (Type: *P. cordata* Niedenzu)

3292 10. BRUNIA Linn., Sp. Pl., ed. 1, p. 199 (1753)

Calyx-lobes free, produced beyond the ovary. *Petals* 5, about as long as the calyx-lobes, sometimes united into a tube, linear, usually with a 2-lobed pouch or other appendage, villous. *Stamens* 5, unequal, longer than the petals, inserted in the mouth of the corolla-tube when petals joined; anthers versatile, elliptic, deeply cleft. *Ovary* semi-inferior, 2-chambered, with 2 ovules in each chamber; style 1 or styles 2; stigma simple or 2-cleft.

Ericoid shrubs or undershrubs; leaves usually densely imbricate; flowers in oblong or globose heads; heads terminal and solitary or arranged in racemes; bracts exceeding the flowers or hidden.

Species 7, mostly in the south-western districts of the Cape Province, but extend to the Knysna, Humansdorp, and Uitenhage districts. (Type: *B. nodiflora* Linn.)

3293 11. MNIOTHAMNUS Niedenzu, Engl. & Prantl Pflanzenfam., vol. 3, 2a, p. 136 (1891)

Calyx tube ribbed; lobes linear, villous. *Petals* twice as long as the calyx-lobes, sessile, elliptic-oblong, with a thickened portion at the base within. *Stamens* 5, included, inserted on the tube of the calyx, shorter than the petals; filaments incurved; anthers ovate or orbicular. *Ovary* semi-inferior, 1-chambered, with a single pendulous ovule; style simple.

Ericoid shrubs; leaves very small, densely imbricate; flowers inconspicuous, solitary, axillary or terminal.

Species 2, confined to the south-western districts of the Cape Province. (Type: *M. callunoides* (Oliv.) Nied.)

3294 12. BERZELIA Brongn., Ann. Sc. Nat., Ser. 1, 8, tab. 35, fig. 1, p. 370 (1826 Aug.)

Calyx-tube obconic, adnate to the ovary; lobes 4 or 5, subulate or linear-oblong, unequal or subequal. *Petals* as many as the sepals and longer than them, linear, usually with a thickened ridge at the base. *Stamens* 4—5, longer than the petals; filaments linear; anthers oblong, with the thecae diverging. *Ovary* semi-inferior, 1-chambered, with a solitary pendulous ovule; style subulate, about as long or shorter than the petals; stigma simple. *Fruit* indehiscent, obconic or turbinate.

Ericoid shrubs; leaves small, usually densely imbricated, spreading or erect, mostly linear, rarely ovate; flowers small, in congested ovoid or globose heads.

Species 12, found in the south-western districts of the Cape Province, but extend through the George, Knysna, Humansdorp, and Uitenhage districts to the Albany district. (Type: *B. abrotanoides* Brongn.)

82. HAMAMELIDACEAE

Flowers bisexual or unisexual, regular or irregular. *Perianth* sometimes absent in the female flowers. *Calyx-tube* various, more or less adnate to

the ovary; lobes usually 5, rarely 4, imbricate or valvate. *Petals* 4 or more, rarely 0, perigynous or epigynous, imbricate or valvate, usually linear-spathulate or obovate. *Stamens* as many as and alternating with the petals, free; filaments often thickened and shorter than the anthers; anthers 2-theccous, often variously beaked. *Disc* 0, or annular or glandular. *Ovary* inferior, semi-inferior, or rarely superior, 2-chambered, with 1 or more pendulous ovules in each chamber; styles subulate, free, often recurved at the apex, deciduous or often persistent; stigmas terminal or lateral. *Fruit* a woody capsule. *Seeds* 1 to many, sometimes winged; endosperm thin; embryo straight.

Trees or shrubs, glabrous, pubescent, or with stellate hairs; leaves alternate, rarely opposite, petioled, simple or pinnatifid, entire or serrate, with the teeth sometimes glandular; stipules 2, mostly paired, deciduous or persistent; flowers small or large, often in heads or head-like spikes.

Genera 19, with about 50 species; found in warm and tropical countries.

3311 TRICHOCLADUS Pers., Syn., vol. 2, p. 597 (1807)

Flowers bisexual, sometimes with female flowers. *Calyx-tube* shallow or campanulate, sometimes adnate to the ovary; lobes 5, more rarely 4, valvate. *Petals* 5, more rarely 4, linear-clavate, much longer than the calyx, with revolute margins, valvate, absent in the female flowers. *Stamens* as many as the petals; filaments usually shorter than the anthers, elliptic or turbinate; anthers erect, broad, opening by valves, sometimes beaked. *Ovary* from inferior to almost superior, usually hairy, with a solitary ovule in each chamber; styles 2, free, subulate, sometimes recurved at the apex. *Fruits* subglobose, tomentose, 2-valved.

Shrubs usually with stellate tomentum or villous; leaves opposite or alternate, entire, elliptic or lanceolate, sometimes acuminate; stipules small; flowers in dense terminal spikes.

An African genus of 5, probably 8, species; 3, probably 5, species in South Africa, extending from the northern Transvaal, through Natal and the coastal belt to the George district. (Type: *T. crinitus* Pers.)

83. ROSACEAE

Flowers usually regular and bisexual, more rarely unisexual or with occasional bisexual flowers. *Calyx-tube* short or long, narrow or widened, sometimes spiny or bristly; lobes usually 5, rarely 4 or many or 0, imbricate, occasionally with a second external row of lobes alternating with the proper lobes. *Disc* lining the calyx-tube sometimes tumid or lobed. *Petals* equalling the number of calyx-lobes, rarely 0, small or much exceeding the calyx, imbricate, often deciduous. *Stamens* usually indefinite, sometimes definite or reduced to 1 or 2, usually inserted with the petals; filaments subulate or filiform, sometimes connate; anthers small, 2-theccous. *Gynaecium* of 1 or more carpels, in 1 to many rows, free or more or less connate among themselves or adnate to the calyx-tube or adnate to one side of the calyx-tube, sessile or stalked, with 1—2, rarely many, ascending or pendulous ovules in each ovary; styles as many as the carpels, free or very rarely connate, inserted at the base or the ventral face of the carpels, sometimes terminal; stigmas capitate, brush-like, fimbriate, penicillate, or plumose. *Fruit* various, of dry achenes, succulent aggregated drupes, a many-locular capsule, a follicle, a pome, or a drupe. *Seed* erect or pendulous; embryo straight, with fleshy cotyledons; endosperm rarely present.

Herbs, shrubs, or trees, erect, prostrate, or scandent; leaves various, simple or compound, alternate, rarely opposite; petiole often dilated at the base and 2-glandular at the apex; stipules 2, free or adnate to the petiole, rarely 0 or obsolete; flowers large or small; inflorescence various; bracteoles present or absent.

Genera about 120, with over 1,000 species, the greater number of which are massed in the temperate and colder parts of the northern hemisphere.

- | | |
|---|--|
| 1. Petals 0 | 2 |
| Petals 5, rarely 10—12 or 0 but, if so, then 2 ovules in each ovary ... | 5 |
| 2. Flowers unisexual; stigmas plumose | 9. <i>Cliffortia</i> Linn. |
| Flowers bisexual, rarely some unisexual, but then stigmas brush-like, fimbriate, or penicillate | 3 |
| 3. Stigmas brush-like, fimbriate, or penicillate | 4 |
| Stigmas capitate, not hairy | 4. <i>Alchemilla</i> Linn. |
| 4. Calyx-lobes petaloid; stigmas brush-like | 7. <i>Sanguisorba</i> Linn. |
| Calyx-lobes not petaloid; stigmas peltate or dilated, fimbriate or penicillate | 8. <i>Acaena</i> Linn. |
| 5. Carpel 1, attached to one side of the calyx-tube; style basal | 14. <i>Parinari</i> Aubl. |
| Carpel 1 or more from the base of the calyx-tube or on a raised receptacle or carpels connate among themselves and adnate to the calyx-tube ... | 6 |
| 6. Fruit succulent | 1. <i>Rubus</i> Linn. |
| Fruit dry or coriaceous | 7 |
| 7. A tree; leaves entire | 13. <i>Pygeum</i> Gaertn. |
| More or less herbaceous plants with divided leaves, rarely woody shrubs but then leaves imparipinnate | 8 |
| 8. Fruits without spines or bristles | 9 |
| Fruit armed with spines or bristles... .. | 10 |
| 9. Stamens indefinite | 2. <i>Potentilla</i> Linn. |
| Stamens 10 | 12. <i>Grielum</i> Linn. |
| 10. Woody shrubs or small trees | 6. <i>Leucosidea</i> E. & Z. |
| Herbaceous or subherbaceous plants | 11 |
| 11. Fruit with hooked spines | 13 |
| Spines on fruit not hooked | 12 |
| 12. Bracteoles 5 | 10. <i>Neurada</i> Linn. |
| Bracteoles 0 | 11. <i>Neuradopsis</i> Bremekamp & Obermeyer |
| 13. Carpels several or many | 3. <i>Geum</i> Linn. |
| Carpels 2, rarely 3 | 5. <i>Agrimonia</i> Linn. |

3353

1. *RUBUS* Linn., Sp. Pl., ed. 1, p. 492 (1753)

Calyx-tube expanded, convex in the centre only; lobes 5, persistent. *Petals* 5. *Stamens* indefinite, very rarely definite, inserted in the mouth of the receptacle; filaments filiform; anthers didymous. *Disc* lining the tube of the receptacle. *Gynaecium* of indefinite carpels, inserted on the receptacle, with 2 pendulous ovules in each ovary (1 often very small); style subterminal, filiform; stigmas simple or capitate. *Fruit* of many small drupes, aggregated on a dry conical receptacle, 1-seeded.

Shrubs, rarely herbs, mostly trailing, armed with sharp prickles; leaves alternate, simple, lobed, 3—5 foliolate or imparipinnate (pinnate or digitate in the South African species), often with cut margins, glabrous or hairy; stipules adnate to the petiole; inflorescence a terminal or axillary panicle or corymb, rarely flowers solitary; bracteoles 0.

A genus of almost 3,000 described species, of which number probably not all are valid; natives of Europe, Africa, Asia, India, China, and North America; 10 species described from South Africa, extending from the Transvaal, Swaziland, and Natal, through the eastern districts and along the coastal belt to Van Rhynsdorp. (Type: *R. caesius* Linn.)

3356 2. POTENTILLA Linn., Sp. Pl., ed. 1, p. 495 (1753)

Calyx-tube concave, hemispherical, or urceolate, 5- (rarely 4-) bracteate at the base; lobes 5, rarely 4, erect or spreading, triangular-ovate, valvate. *Petals* 5, rarely 4, obovate, orbicular, or linear-spathulate. *Stamens* indefinite, perigynous, inserted with the petals; filaments subulate, triangular, or hair-like; anthers small. *Disc* annular or lining the receptacle. *Gynaecium* of many carpels, rarely carpels few or very rarely 1, situated on a convex receptacle, with a single pendulous ovule in each ovary; styles lateral; stigmas truncate or capitate. *Fruit* of small dry achenes on a convex hairy receptacle.

Herbs or undershrubs, rarely annuals; leaves alternate, digitately 3—7-foliate or imparipinnate; leaflets solitary or 2—3-nate, often lobed or divided; stipules adnate to the base of the petiole; inflorescence often a corymbose cyme, rarely flowers axillary and solitary.

Species about 500, very common in the temperate and frigid regions of the northern hemisphere; a single species found near the Orange River in the Orange Free State and in the Transvaal; 2 or 3 other species introduced. (Type: *P. reptans* Linn.)

3365 3. GEUM Linn., Sp. Pl., ed. 1, p. 500 (1753)

Calyx-tube persistent, 5-bracteate at the apex, rarely nude; lobes 5, imbricate or valvate. *Petals* 5, orbicular or obovate, very often larger than the sepals. *Stamens* indefinite, perigynous, inserted with the petals; filaments filiform. *Disc* lining the receptacle. *Gynaecium* of many or several free carpels on a columnar receptacle, with a solitary ascending ovule in each ovary; style filiform, straight or kneed; stigmas minute. *Fruit* a number of achenes on the elongated receptacle or sessile in the receptacle, sometimes hairy, tipped with the hardened awn-like hooked or curled styles.

Herbaceous plants with perennial rhizomes; leaves radical, imparipinnate, with the terminal segment usually the largest; stem leaves very few, very often 3-foliate or bract-like; stipules adnate to the petiole; flowers terminating the branches in a scape or often in corymbs.

Species about 71, natives of the temperate and frigid zones; 1 species in South Africa, extending from Natal to the Albany district; also recorded from Basutoland and the Queenstown district. (Type: *G. urbanum* Linn.)

3375 4. ALCHEMILLA Linn., Sp. Pl., ed. 1, p. 123 (1753)

Calyx-tube urceolate, constricted at the throat or campanulate and sometimes ribbed; lobes 8—10 in 2 rows; the inner valvate; the outer usually smaller than the inner. *Petal* 0. *Stamens* 1—4, inserted in the throat of the receptacle, usually shorter than the calyx-lobes; anthers small. *Disc* lining the receptacle with a thickened margin which closes the mouth of the receptacle. *Gynaecium* of 1—4 free carpels, sessile or subsessile at the base of the receptacle, with a solitary ascending ovule in each ovary, styles basal or ventral; stigmas capitate. *Fruit* of 1—2 achenes, included in the receptacle.

Annual or perennial herbs, decumbent or erect, sometimes densely leafy; leaves alternate, orbicular, lobed, digitate, or palmately partite, often with cut margins; stipules adnate to the petiole; flowers small, very often in many-flowered corymbs, rarely in lax cymes or solitary; bracts 0.

Species described about 355, mostly South American, but also found in India, Australia, Africa, and Madagascar; 14 species described from South Africa, extending from the Transvaal and Natal, through the eastern districts to the Cape; also recorded from the Orange Free State, Basutoland, and the Barkly West district. (Type: *A. vulgaris* Linn.)

3376 5. AGRIMONIA Linn., Sp. Pl., ed. 1, p. 418 (1753)

Calyx-tube persistent, armed with many hooked bristles or with 4 teeth, sometimes constricted at the throat; lobes 5, imbricate. *Petals* 5, larger than the calyx-lobes, orbicular or oblong. *Disc* lining the receptacle, with a thickened margin, sometimes closing the mouth of the receptacle. *Stamens* 5—10 or more, inserted in the mouth of the receptacle; filaments terete, often incurved; anthers oblong. *Gynaecium* of 2 free carpels, very rarely carpels 3, sessile, included in the receptacle, with a single pendulous ovule in each ovary; styles terete, exserted; stigmas slightly dilated, 2-lobed. *Fruit* of 1—2 achenes, enclosed in the hardened receptacle which is covered with the persistent hardened hooked spines.

Perennial herbs; leaves alternate, imparipinnate; leaflets incised-serrate; stipules adnate to the base of the petiole; inflorescence very often a terminal spike-like raceme; flowers small; bracts and bracteoles present.

Species about 25, chiefly natives of the north temperate zone; also found in North and South America; 1 species in South Africa, extending from the Transvaal, Natal, and the eastern districts to the George and Knysna districts; recorded also from the Queenstown and Somerset East districts. (Type: *A. eupatoria* Linn.)

3379 6. LEUCOSIDEA E. & Z., Enum., p. 265 (1836)

Calyx-tube persistent, somewhat constricted at the throat, villous; lobes 10—12, in 2 rows; the outer ovate; the inner linear-lanceolate, much longer than the outer; valvate. *Petals*, 5, obovate or obovate-oblong, about as long as the outer sepals, deciduous. *Disc* lining the receptacle annular and almost closing the mouth of the receptacle, villous. *Stamens* 10—12, shorter than the petals, inserted on the disc; filaments semi-terete; anthers didymous. *Gynaecium* of 2—3 free carpels included in the receptacle, with a single pendulous ovule in each ovary; styles terete, exserted; stigmas lateral, channelled. *Fruit* of membranous achenes included in the receptacle.

Densely leafy shrubs or small trees, silky-villous; leaves alternate, petioled, imparipinnate; leaflets incised-toothed; stipules adnate to the petiole; flowers densely aggregated in shortly peduncled villous terminal spikes.

Endemic; species 1, found in the northern Transvaal, Natal, the eastern Orange Free State, Basutoland, and through the eastern districts to the Cathcart and Queenstown districts. (Type: *L. sericea* E. & Z.)

3381 7. SANGUISORBA Linn., Sp. Pl., ed. 1, p. 116 (1753)

Flowers bisexual, or bisexual with occasional unisexual flowers. *Calyx-tube* small, constricted at the throat, sometimes 4-angled and tuberculate; lobes 4, petal-like, sometimes ovate with a membranous margin, imbricate, deciduous. *Petals* 0. *Stamens* 4 or many; filaments elongated, sometimes thread-like. *Gynaecium* of 1—3 carpels, included in the receptacle, with a solitary pendulous ovule in each ovary; style filiform; stigmas brush-like. *Fruit* usually a solitary leathery achene, included in the dry angled or variously roughened receptacle which is sometimes narrowly 4-winged and tubercled between the wings.

Perennial or annual herbs; leaves alternate, petioled, unequally pinnate; pinnae serrated; stipules conspicuous; flowers in dense spikes or heads; bracts present.

Species 30, natives of the north temperate hemisphere; 1 species naturalized in South Africa. (Type: *S. canadensis* Linn.)

3386

8. ACAENA Linn., Mant., vol. 2, p. 145 (1791)

Calyx-tube persistent, nude or armed with hooked or spreading spines or spines with several recurved hooks at the apex, sometimes densely villous; lobes 3—7, valvate, persistent or deciduous. *Petals* 0. *Stamens* 1—10, inserted in the throat of the receptacle; filaments short, rarely elongated; anthers didymous. *Disc* lining the receptacle, annular, almost closing the mouth of the receptacle. *Gynaecium* of 1—2 free carpels, included in the receptacle, with a solitary pendulous ovule in each ovary; styles subterminal, short; stigmas peltate or dilated, fimbriate or penicillate. *Fruit* of 1—2 dry achenes, hidden and included in the smooth tuberculate or awned hardened receptacle.

Herbs or undershrubs, sometimes with a distinct tap-root, glabrous or silky; leaves alternate, sometimes all radical, imparipinnate; leaflets incised or serrate; stipules adnate to the petiole; flowers in heads at the apex of the stem or in elongated scapes or in interrupted spikes.

Species about 150, in the temperate and frigid regions of the southern hemisphere, chiefly South America; 1 species found on the island of Tristan da Cunha; 2 species in South Africa, recorded from the Caledon, Worcester, Ceres, Clanwilliam, and Sutherland districts. (Type: *A. elongata* Linn.)

3388

9. CLIFFORTIA Linn., Sp. Pl., ed. 1, p. 1038 (1753)

Plants dioecious or monoecious (very rarely flowers bisexual). *Male flowers*:—*Sepals* 4, or often 3, deciduous or persistent. *Petals* often wanting. *Stamens* often 8—20 or 3, 4, or 6, sometimes up to 50; filaments filiform, glabrous; anthers didymous. *Rudimentary carpels* 0. *Female flowers*:—*Receptacle* constricted at the mouth. *Calyx* and *petals* as in the male. *Gynaecium* of 1—2 free carpels, included in the receptacle and with a single pendulous ovule in each ovary, styles 1—2, slender, exserted, plumose. *Fruit* usually of a single achene, enclosed in the hardened (rarely succulent) receptacle.

Mostly rigid shrubs, more rarely procumbent, very rarely trees; leaves alternate, sessile or shortly petioled, 1—3-foliolate, entire or toothed, often appearing single or 1-foliolate either from the confluence of the 3 leaflets into one or from the lateral leaflets being very minute or abortive; stipules adnate to the petiole, rarely absent; flowers sessile, more rarely pedicelled, axillary, usually solitary, more rarely fascicled.

Species 78, all African; the majority of the species occur in the south-western districts of the Cape Province, a few species extend along the coastal belt through Natal to the northern Transvaal; 2 species found in tropical Africa. (Type: *C. polygonifolia* Linn.)

3390

10. NEURADA Linn., Sp. Pl., ed. 1, p. 441 (1753)

Flowers bisexual. *Calyx-tube* broadly expanded; lobes 5, triangular. *Petals* 5, small. *Stamens* 10, inserted in the throat of the calyx-tube; filaments short; anthers ovoid. *Gynaecium* of 10 carpels, adhering with each other and with the calyx-tube, with a solitary pendulous ovule in each ovary; styles broadly subulate from the base; stigmas capitate. *Fruit* orbicular, depressed—conical, smooth at the base, spiny on the sides, of 10 horizontally spreading carpels each tipped with the persistent spiny style.

An annual woolly herb; leaves alternate, petioled, ovate, lobed; stipules minute or obsolete; flowers solitary, axillary, pedicelled; bracteoles 5.

Species 1, native of northern Africa, Arabia, Persia, and India; naturalized in South Africa. (Type: *N. procumbens* Linn.)

3390a

11. **NEURADOPSIS** Bremekamp & Obermeyer, Ann. Transvaal Mus., vol. 16, p. 415 (1935)

Flowers bisexual. *Calyx-tube* broadly expanded; lobes 5, oblong, triangular at the apex. *Petals* 5, large. *Stamens* 10, in 2 series, inserted in the throat of the calyx-tube; the 5 longer equalling the calyx-lobes; filaments semiterete; anthers ovoid. *Gynaecium* of 10 carpels, adhering with each other and with the calyx-tube, with a solitary pendulous ovule in each ovary, styles subterete, as long as the longer stamens; stigmas capitate. *Fruit* discoid, armed with 3 series of spines, of 10 horizontally spreading carpels each tipped with the persistent style.

Low annual herbs, sometimes with an evident tap-root, cano-tomentose; leaves alternate, petioled, pinnatifid; stipules 0; flowers axillary, solitary, pedicelled, bracteoles 0.

Endemic; species 3, found in South West Africa. (Type: *N. austro-africana* (Schinz) Bremekamp & Obermeyer (= *Neurada austro-africana* Schinz))

3391

12. **GRIELUM** Linn., Gen., ed. 6, p. 578 (1764)

Calyx-tube broadly and shallowly campanulate; lobes 5, spreading, ovate, sometimes acuminate. *Petals* 5, imbricate, inserted in the throat of the calyx-tube and alternating with the calyx-lobes, much larger than the calyx-lobes, obovate. *Stamens* 10, inserted in the throat of the calyx-tube and about as long as the calyx-lobes; filaments terete or flattened, narrowing from the base upwards; anthers oblong or elliptic. *Gynaecium* of 3—10 carpels connate with each other and adnate to the calyx-tube, with a single pendulous ovule in each ovary; styles 3—10, terete, shorter than the stamens; stigmas capitate. *Fruit* depressed, 3—10-locular; the loculi at length opening in the axis, 1-seeded.

Low annual herbs, with a definite tap-root, cano-tomentose or woolly; leaves alternate, petioled, pinnately decompose, with the lobes broad or linear; stipules obsolete; flowers sometimes large, solitary, axillary, pedicelled.

Endemic; species 6, found in the western and north-western districts of the Cape Province, also extending from Namaqualand to the Cape as far as the Humansdorp district. (Type: *G. tenuifolium* Linn.)

3393

13. **PYGEUM** Gaertn., Fruct., vol. 1, p. 218, t. 46 (1788)

Flowers bisexual or occasionally with a few unisexual flowers. *Calyx-tube* obconic or campanulate; lobes 5, 10, 12, small, deciduous, leaving a narrow ring. *Petals* 5, 10, 12, or 0, inserted in the throat of the corolla-tube, scarcely larger than the calyx-lobes, often malformed or confused with the calyx-teeth and longer than them; filaments filiform; anthers didymous. *Ovary* superior, sessile, 1-chambered, with 3 pendulous ovules; style often thick, terete, and as long as or longer than the stamens; stigma capitate or somewhat crateriform. *Fruit* dry, coriaceous, or succulent, often transversely oblong in outline, 1-seeded.

Trees or shrubs, glabrous or tomentose; leaves alternate, simple, petioled, often elliptic with crenate or shortly serrated margins, often with 2 glands on each side at the base; stipules small, deciduous; inflorescence an axillary and lateral solitary raceme or the racemes fascicled; flowers small.

Species about 113, natives of southern Asia, Ceylon, and the Malay Archipelago; 1 species in South Africa, extending from the northern Transvaal, Natal, and

the eastern districts to Stutterheim; also found in the Tzitzikamma and Knysna forests; the native species also occurs in tropical Africa. (Type: *P. zeylanicum* Gaertn.)

3405 14. PARINARI Aubl., Pl. Gui. franc., vol. 1, p. 514 (1775)

(*Parinarium* Juss.)

Calyx-tube short or elongate, sometimes campanulate, equal or more or less gibbous at the base, sometimes villous without and within; lobes 5, obtuse and imbricate or acute and sometimes subvalvate. *Petals* 5, rarely 4, inserted in the mouth of the calyx-tube, sessile or clawed, sometimes scarcely longer than the calyx-lobes, deciduous, sometimes with a tuft of long reflexed hairs from the base. *Stamens* 7 to many, sometimes unequal, inserted in the throat of the calyx-tube, connate at the base into a short ring or into a unilateral bundle, sometimes appearing almost free, about as long as the calyx-lobes; filaments subulate-filiform. *Ovary* superior, adnate to one side of the calyx-tube, 2-chambered, with a single erect ovule in each chamber, often villous, style basal, terete, often hairy; stigma more or less truncate. *Fruit* an ovoid or spherical drupe, fibrous or succulent.

Trees, rarely more or less acaulescent woody plants with an extensive underground root system; leaves alternate, entire, sometimes with 2 glands at the base; stipules subulate or lanceolate; inflorescence a corymbose-raceme or a panicle; bracteoles 2.

Species about 33, natives of tropical America, Asia, Australia, and Africa; 2 species occur in South Africa, found in the Transvaal and Natal.

NOTE.—Dr. C. R. Metcalfe and Dr. L. Chalk, *Anatomy of the Dicotyledons* (1950), consider that this genus and its allies should be placed in a distinct family and removed from the *Rosaceae*.—E. P. P.

84. CONNARACEAE

Flowers usually bisexual, sometimes with a few unisexual flowers, regular or subirregular. *Calyx* 5-fid or 4—5-partite, often persistent, imbricate or valvate. *Petals* 5, free or sometimes slightly connate at the middle, imbricate, very rarely valvate. *Stamens* perigynous or hypogynous, sometimes distinctly declinate, 5 or 10; those opposite the petals very often shorter and often imperfect; filaments often connate at the base. *Disc* 0 or slender, outside the base of the stamens, annular or broken. *Gynaecium* of 5, rarely 1—3, free hirsute carpels with 2 collateral ascending ovules in each ovary. *Fruit* of follicles, very often solitary, sessile or stalked, 1-, very rarely, 2-seeded. *Seed* with or without an axil; radicle remote from the hilum; endosperm present or 0.

Trees or shrubs, erect or scandent; leaves persistent or deciduous, alternate, 1—3-foliolate or imparipinnate; leaflets entire; stipules 0; inflorescence a raceme or panicle.

Genera 25, species almost 200, natives of the tropics and subtropics of the Old and New Worlds.

3428

CNESTIS Juss., Gen., p. 374 (1789)

Flowers bisexual or unisexual with occasional bisexual flowers. *Calyx* 5-partite; lobes subequal, valvate. *Petals* 5, usually shorter than the calyx, glabrous. *Stamens* 10, subequal; filaments free at the base; anthers usually at length recurved. *Gynaecium* of 5 sessile carpels, with 2 ovules in each ovary; styles short; stigmas capitate. *Fruit* of 1—2 capsules, reniform or cylindric, curved or undulated, velvety on the outside, with rigid hairs on

the inside and sometimes also on the outside. *Seed* erect, sometimes with the testa partly fleshy; embryo short; endosperm present.

Trees or shrubs, sometimes scandent climbers; leaves imparipinnate; leaflets many-jugate, sometimes lanceolate or oblong-lanceolate, acuminate or sub-acuminate; inflorescence a raceme, rarely a panicle, or flowers solitary or fascicled; flowers small, tomentose.

Species about 41, natives of Africa, Madagascar, and the Malay Archipelago; 1 species occurs in South Africa, extending from the northern Transvaal, Zululand, Natal to the Transkei.

85. LEGUMINOSAE

Flowers zygomorphic and often bisexual, or regular and often unisexual with occasional bisexual flowers. *Sepals* in the irregular flowers often 5, rarely 4, free or connate into a toothed or lobed calyx, sometimes the calyx 2-lipped; in the regular flowers 5, 4, or rarely 3 or 6, connate or free. *Petals* in the zygomorphic flowers 5 or fewer by abortion; in the regular flowers as many as the sepals. *Stamens* twice as many as the petals, sometimes more than the number of petals, rarely as many as or fewer than the number of petals, sometimes indefinite; filaments free or variously connate; anthers 2-theous, generally opening by longitudinal slits. *Ovary* superior, 1-chambered, with 1 to many ovules; style simple; stigma simple. *Fruit* generally a 2-valved legume, dry, more rarely fleshy or drupaceous, sometimes indehiscent, sometimes breaking up into segments. *Seeds* various; embryo with often flat cotyledons and a straight or curved radicle, endosperm 0 or scanty.

Trees, shrubs, or herbs of various habit; leaves alternate, rarely opposite, simple or pinnately or digitately compound; stipules usually present; flowers variously arranged; floral bracts 2, various, rarely absent.

Genera close on 500, with over 11,000 species, distributed all over the world, somewhat rare in New Zealand.

NOTE.—The family as here dealt with is regarded by modern authors as comprising the 3 families *Caesalpiniaceae*, *Mimosaceae*, and *Papilionaceae* (*Fabaceae*).—E. P. P.

- | | | | | |
|---|-----|-----|-----|---------------------------|
| 1. Petals valvate in bud; flowers regular (<i>Mimosaceae</i>) | ... | ... | ... | 2 |
| Petals imbricate in bud or wanting; flowers more or less irregular | ... | ... | ... | 8 |
| 2. Stamens numerous | ... | ... | ... | 3 |
| Stamens 10 or 20, rarely less than 10 | ... | ... | ... | 4 |
| 3. Filaments connate into a distinct tube | ... | ... | ... | 1. Albizzia Dur. |
| Filaments free or connate at the base into a very short cup or disc | ... | ... | ... | 2. Acacia Willd. |
| 4. Lower portion of inflorescence bearing neuter flowers which are often differently coloured from the upper bisexual flowers | ... | ... | ... | 4. Dichrostachys W. & A. |
| Inflorescence not partly of neuter flowers | ... | ... | ... | 5 |
| 5. Anthers without apical glands | ... | ... | ... | 3. Mimosa Linn. |
| Anthers (at least in the bud) with apical glands which are sometimes caducous, rarely without glands but then pod indehiscent | ... | ... | ... | 6 |
| 6. Ovary with 1—2 ovules | ... | ... | ... | 5. Xerocladia Harv. |
| Ovary with many ovules | ... | ... | ... | 7 |
| 7. Pods breaking transversely into 1-seeded portions | ... | ... | ... | 7. Entada Adans. |
| Pods 2-valved or indehiscent | ... | ... | ... | 6. Elephantorrhiza Benth. |

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|--|--------------------------------|
| 8. Petals 1—6 or 0; the posterior petal innermost in bud; petals not forming a papilionaceous corolla (<i>Caesalpinaceae</i>) | 9 |
| Petals 5; the posterior petal outermost in bud; the petals forming a papilionaceous corolla (<i>Papilionaceae</i>) | 28 |
| 9. Leaves pinnate, usually with more than 2 leaflets, more rarely leaflets only 2, or leaves simple, entire or 2-lobed | 10 |
| Leaves bipinnate | 21 |
| 10. Leaflets 2, or leaves simple, entire or 2-lobed | 11 |
| Leaflets more than 2 | 12 |
| 11. Petals 0; calyx of 4—5 segments | 10. <i>Colophospermum</i> Kirk |
| Petals 5; calyx spathaceous | 15. <i>Bauhinia</i> Linn. |
| 12. Stamens many... .. | 24. <i>Cordyla</i> Lour. |
| Stamens 2—10 | 13 |
| 13. Calyx-segments 4 | 14 |
| Calyx-segments usually 5, sometimes 5—7, rarely 1 or 0, but then petals 0 | 16 |
| 14. Petals 5 or reduced to 5 scales; stamens 10... .. | 15 |
| Petals 1; stamens 3—8 | 14. <i>Azalia</i> Smith |
| 15. Stamens all free; pod glabrous | 11. <i>Schotia</i> Jacq. |
| Stamens diadelphous; pod velvety | 13. <i>Baikiaea</i> Bth. |
| 16. Filaments villous at the base | 17 |
| Filaments glabrous | 18 |
| 17. Ovules many | 18. <i>Parkinsonia</i> Linn. |
| Ovules 2—3 | 19. <i>Haematoxylon</i> Linn. |
| 18. Ovary with 2 ovules | 19 |
| Ovary with more than 2 ovules | 20 |
| 19. Strongly armed trees; flowers in panicles | 12. <i>Umtiza</i> Linn. |
| Unarmed trees; flowers in panicle cymes | 16. <i>Dialium</i> Linn. |
| 20. Fruit drupaceous | 25. <i>Pseudocadia</i> Harms |
| Fruit a pod | 17. <i>Cassia</i> Linn. |
| 21. Stigma broadly peltate | 23. <i>Peltophorum</i> Walp. |
| Stigma not peltate | 22 |
| 22. Ovary with 1 ovule | 23 |
| Ovary with 2 or more ovules | 24 |
| 23. Pod flattened, somewhat leathery | 9. <i>Burkea</i> Bth. |
| Pod produced at the apex with a wing | 20. <i>Pterolobium</i> R.Br. |
| 24. Ovary with 2—3 ovules | 25 |
| Ovary with more than 3 ovules, if less, then flower large and showy | 26 |
| 25. Filaments glabrous | 9. <i>Burkea</i> Bth. |
| Filaments pilose at the base... .. | 19. <i>Haematoxylon</i> Linn. |
| 26. Flowers usually large and showy; filaments declinate | 22. <i>Caesalpinia</i> Linn. |
| Flowers medium-sized or small; filaments not or slightly declinate | 27 |

27. Large trees; leaflets usually large and leathery	8. <i>Erythrophloeum</i> Afzel.	
Herbs or low undershrubs; leaflets small	21. <i>Hoffmannseggia</i> Cav.	
28. Leaves simple, rarely unifoliolate, very rarely 2-foliolate or much reduced so that they appear to be absent	...	29
Leaves pinnately or digitately foliolate	...	56
29. Leaves rudimentary, apparently absent	60. <i>Indigofera</i> Linn.	
Leaves developed, simple, unifoliolate, rarely 2-foliolate...	...	30
30. Leaves 2-foliolate	76. <i>Zornia</i> J. F. Gmel.	
Leaves simple or unifoliolate	...	31
31. Stamens free or connate at the base only	...	32
Stamens diadelphous or in 2 bundles of 5 each or monadelphous, sometimes staminal-tube short...	...	33
32. Flowers in racemes or panicles; ovary 1—4-ovuled	30. <i>Baphia</i> DC.	
Flowers solitary or 2—4-nate, on axillary peduncles; ovary many-ovuled	32. <i>Podalyria</i> Linn.	
33. Stamens diadelphous or rarely divided into 2 bundles by the staminal-tube splitting on either side	...	34
Stamens monadelphous	...	47
34. Stipules 0	...	35
Stipules present, sometimes caducous	...	37
35. Keel gibbous or saccate at the base, with the tip dark-coloured	35. <i>Amphithalea</i> E. & Z.	
Keel not gibbous or saccate at the base and not dark-coloured at the tip		36
36. Leaves palmately nerved, pungent	33. <i>Liparia</i> Linn.	
Leaves not palmately nerved or pungent	34. <i>Priestleya</i> DC.	
37. Leaves gland-dotted	61. <i>Psoralea</i> Linn.	
Leaves not gland-dotted	...	38
38. Pod constricted between the seeds and breaking up transversely...	...	39
Pod 2-valved, not constricted between the seeds, rarely indehiscent	...	40
39. Calyx rigidly glumaceous	79. <i>Alysicarpus</i> Neck.	
Calyx not glumaceous	77. <i>Desmodium</i> Desv.	
40. Keel spirally contorted or with a spirally twisted beak	...	41
Keel not as above	...	42
41. Flowers solitary or 2-nate	66. <i>Bolusia</i> Benth.	
Flowers in a raceme	96. <i>Phaseolus</i> Linn.	
42. Calyx glandular	95. <i>Flemingia</i> Roxb.	
Calyx not glandular	...	43
43. Pod indehiscent	80. <i>Dalbergia</i> Linn. f.	
Pod 2-valved, dehiscent	...	44
44. Style bearded on the inner side	...	44a
Style not bearded	...	45

- 44a. Stigma terminal 63. *Tephrosia* Pers.
 Stigma very oblique or on the inner side of the style
 97. *Vigna* Savi.
45. Keel spurred, rarely saccate 60. *Indigofera* Linn. 46
 Keel not spurred, rarely saccate or gibbous
46. Ovary with few to many ovules, rarely ovules 2 but, if so, then calyx
 sub-2-lipped 46a
 Ovary usually 2-ovuled; calyx oblique at the base
 94. *Eriosema* Desv.
- 46a. Calyx sub-2-lipped 63. *Tephrosia* Pers.
 Calyx with sub-equal lobes 67. *Microcharis* Benth.
47. Pod indehiscent or breaking up transversely into segments 48
 Pod 2-valved 49
48. Pod indehiscent 80. *Dalbergia* Linn. f.
 Pod breaking up transversely 77. *Desmodium* Desv.
49. Style bearded on the inner side 97. *Vigna* Savi.
 Style not bearded, if laterally pubescent, then the calyx usually 2-lipped 50
50. Leaves usually pungent at the apex, often cordate or amplexicaul at the
 base... .. 38. *Borbonia* Linn.
 Leaves not as above 51
51. Calyx usually 2-lipped or sub-2-lipped; stipules present 52
 Calyx not as above; stipules 0 53
52. Keel distinctly beaked 51. *Crotalaria* Linn.
 Keel not beaked 52a
- 52a. Flowers axillary, usually in pairs 62. *Sylitra* E. May.
 Inflorescence a raceme 63. *Tephrosia* Pers.
53. Ovary with 1 ovule 36. *Coelidium* Vogel
 Ovary with 2 or more ovules 54
54. Staminal-tube split to the base 54a
 Staminal-tube not split to the base... .. 55
- 54a. Pod obliquely ovate or lanceolate 47. *Aspalathus* Linn.
 Pod not oblique at the base... .. 45. *Lebeckia* Thunb.
55. Petals adnate to the staminal-tube 55a
 Petals free from the staminal-tube 39. *Rafnia* Thunb.
- 55a. Keel with a pocket on each side; ovary 2-ovuled
 37. *Walpersia* Harv.
 Keel without pockets; ovary several-ovuled
 40. *Eurochloa* E. & Z.
56. Leaves pinnately foliolate, with more than 3 leaflets 57
 Leaves pinnately 3-foliolate or digitately 3 to many-foliolate or leaves
 fascicled 84
57. Stamens free or sometimes connate at the base 58
 Stamens diadelphous or monadelphous, rarely with the staminal-tube
 split on either side so that the stamens appear in 2 bundles of 5 each,
 very rarely stamens 9 owing to the absence of the vexillary stamen ... 61

58. Calyx shortly toothed; pod terete or nearly so, constricted between the seeds **26. Sophora** Linn.
 Calyx shortly 2-lipped or the 2 upper lobes more or less connate; pod compressed... .. 59
59. Calyx- 2-lipped; the upper lip 2-toothed; the lower lip 3-toothed; ovary sessile; flowers pink **29. Virgilia** Lam.
 Two upper calyx-lobes more or less connate; ovary stalked or subsessile; flowers yellow or blue 60
60. Two upper calyx-lobes partly connate; ovary stalked; flowers yellow
27. Calpurnia E. May.
 Two upper calyx-lobes connate high up; ovary subsessile; flowers blue
28. Bolusanthus Harms
61. Keel gibbous or spurred on either side 62
 Keel not gibbous or spurred 66
62. Pod indehiscent **82. Lonchocarpus** H. B. & K. 63
 Pod dehiscent
63. Stamens 9, monadelphous **83. Abrus** Adans. 64
 Stamens 10, diadelphous
64. Anthers with apical glands **60. Indigofera** Linn. 65
 Anthers without apical glands
65. A small tree **64. Mundulea** Benth.
 Prostrate or twining herbs **93. Rhynchosia** Lour.
66. Common leaf-rhachis ending in a bristle or tendril; stamens 9
83. Abrus Adans.
 Leaf-rhachis not ending in a bristle or tendril 67
67. Style bearded above; pod membranous and subdehiscent or leathery and 2-valved 68
 Style glabrous; pod various not membranous 70
68. Petals silky or villous without; pod leathery, 2-valved
63. Tephrosia Pers.
 Petals glabrous; pod membranous, subdehiscent 69
69. Flowers bright red, very large and showy; keel somewhat acute, exceeding the vexillum **69. Sutherlandia** R. Br.
 Flowers medium-sized; keel obtuse, usually shorter than the vexillum
70. Lessertia DC.
70. Flowers arranged in dichotomous cymes or in irregular subcorymbose panicles **80. Dalbergia** Linn. f. 71
 Flowers solitary or in racemes; the racemes sometimes paniced
71. Leaves and calyx gland-dotted; ovule usually 1, very rarely ovules 2—3... .. **61. Psoralea** Linn.
 Leaves and calyx not gland-dotted; ovules 2 to many 72
72. Pod breaking up into joints 73
 Pod 2-valved or indehiscent 75
73. Pod enclosed in the calyx **74. Smithia** Ait. 74
 Pod exceeding the calyx

74. Segments of pod narrowed at each end, densely long setose
 72. *Ormocarpum* Beauv.
 Segments of pod square or rounded, not densely setose
 73. *Aeschynomene* Linn.
75. Pod indehiscent 76
 Pod 2-valved 77
76. Pod with a membranous or sharp ridge 81. *Pterocarpus* Linn.
 Pod not winged, but the upper suture sometimes dilated
 82. *Lonchocarpus* H. B. & K.
77. Vexillum hairy 78
 Vexillum glabrous 80
78. Wings free from the keel 65. *Millettia* W. & A.
 Wings slightly adhering to the keel 79
- *79. Herbs or undershrubs, rarely shrubs 63. *Tephrosia* Pers.
 Large shrubs or small trees 64. *Mundulea* Bth.
80. Pod septate between the seeds or incompletely or completely divided
 longitudinally into 2 loculi by the introflexion of the cardinal suture ... 81
 Pod not septate or longitudinally divided 65. *Millettia* Bth.
81. Pod divided longitudinally 71. *Astragalus* Linn.
 Pod transversely septate 82
82. Stamens monadelphous or more or less diadelphous
 85. *Glycine* Linn.
 Stamens diadelphous 83
83. Leaves with many leaflets 68. *Sesbania* Scop.
 Leaves usually with 5 leaflets, the two lower leaflets resembling stipules
 58. *Lotus* Linn.
84. Leaves pinnately or digitately 3-foliolate 85
 Leaves digitately 4 to many-foliolate or fascicled 150
85. Stamens monadelphous, very rarely free or connate at the base only ... 86
 Stamens diadelphous, rarely joined at the middle 117
86. Stamens free or connate at the base ... 31. *Cyclopia* Vent.
 Stamens monadelphous 87
87. Leaves digitately 3-foliolate; anthers unequal, very rarely anthers
 equal, if so, then the leaves and calyx gland-dotted or the 4 lower
 petals or all the petals adnate to the staminal-tube and the pod
 enclosed in the calyx 88
 Leaves pinnately 3-foliolate; anthers uniform, very rarely anthers un-
 equal, if so, then stamens and petals inserted in the throat of the
 calyx-tube or the alternate anthers abortive, very rarely with the
 anther-thecae confluent at the apex 104
88. Petals all, or 4 lower only, adnate to the staminal-tube 89
 Petals free from the staminal-tube 90
89. Herbs; stipules adnate to the petiole 57. *Trifolium* Linn.
 Shrubs or shrublets; stipules free ... 41. *Phaenohoffmannia* O. Kuntze

* 79. *Ophrestia* Forbes (63a) differs from *Tephrosia* in leaves being sessile and leaflets without stipellae.

90. Leaves and calyx gland-dotted; ovule 1, rarely ovules 2
 61. Psoralea Linn.
 Leaves and calyx not gland-dotted; ovules many, rarely 1 or few, but
 then petals not much longer than the calyx 91
91. Pod stalked, indehiscent, winged on the upper suture, sharp and thin
 along the lower **46. Wiborgia** Thunb.
 Pod 2-valved, compressed, terete or turgid 92
92. Pod folded and twisted from side to side; the 4 upper calyx-lobes
 approximate in pairs **44. Listia** E. Mey.
 Pod not folded and twisted 93
93. Pod constricted between the seeds; petals not much longer than the
 calyx **50. Melolobium** E. & Z.
 Pod not constricted between the seeds; petals much exceeding the
 calyx 94
94. Keel and style straight 95
 Keel and style curved... .. 97
95. Flowers small, axillary, usually in pairs **62. Sylitra** E. Mey.
 Flowers in spikes or racemes 96
96. Flowers in terminal or axillary capitate spikes; stipules free
 41. Phaenohoffmannia O. Kuntze
 Flowers in congested or lax terminal racemes; stipules none
 43. Pearsonia Dümmer
97. Calyx intruse at the base **53. Hypocalyptus** Thunb.
 Calyx not intruse at the base 98
98. Keel very distinctly beaked; pod turgid **51. Crotalaria** Linn.
 Keel not distinctly beaked; pod usually compressed, more rarely
 turgid 99
99. The 2 upper calyx-lobes free or connate, the 3 lower connate into a
 3-toothed or 3-fid lip **52. Argyrolobium** E. & Z.
 Calyx subequally lobed, more or less 2-lipped or the 4 upper lobes
 approximate in pairs 100
100. Leaves sessile or subsessile; fruit obliquely ovate at the base
 47. Aspalathus Linn.
 Leaves more or less distinctly petioled; fruit linear, lanceolate, oblong,
 or ovate, not oblique at the base 101
101. Fruit ovate; stipules foliaceous **48. Buchenroedera** E. & Z.
 Fruit linear, lanceolate, or oblong; stipules small, foliaceous, or none ... 102
102. Calyx 2-lipped; the upper lip 2-toothed; the lower lip 3-toothed
 49. Dichilus DC.
 Calyx lobes equal or unequal, not 2-lipped 103
103. Calyx-lobes unequal; funicle filiform **42. Lotononis** E. & Z.
 Calyx-lobes equal; funicle very short **45. Lebeckia** Thunb.
104. Petals and stamens inserted in the throat of the calyx-tube; style
 breaking near the base and forming a hook
 75. Stylosanthes Swartz
 Petals and stamens not inserted in the calyx-throat 105
105. Alternate anthers abortive **87. Teramnus** P. Br.
 Anthers all uniform 106

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|--|------------------------------------|-----|-----|-----|-----|-----|-----|
| 106. Stipules adnate to the petiole... | ... | ... | ... | ... | ... | ... | 107 |
| Stipules free from the petiole... | ... | ... | ... | ... | ... | ... | 108 |
| 107. Flowers in long, more or less spike-like, racemes | | | | | | | |
| | 56. <i>Melilotus</i> | | | | | | |
| Flowers solitary or in short racemes, heads, or umbels | | | | | | | |
| | 54. <i>Trigonella</i> Linn. | | | | | | |
| 108. Vexillum eared at the base | ... | ... | ... | ... | ... | ... | |
| Vexillum not eared | ... | ... | ... | ... | ... | ... | 109 |
| 109. Pods deeply constricted between the seeds or dividing transversely into separate segments | ... | ... | ... | ... | ... | ... | 110 |
| Pods 2-valved, never deeply constricted between the seeds, or pods indehiscent | ... | ... | ... | ... | ... | ... | 111 |
| 110. Pods constricted between the seeds | ... | ... | ... | ... | ... | ... | |
| Pods separating into segments | ... | ... | ... | ... | ... | ... | |
| | 88. <i>Erythrina</i> Linn. | | | | | | |
| | 77. <i>Desmodium</i> Desv. | | | | | | |
| 111. Calyx 2-lipped... | ... | ... | ... | ... | ... | ... | |
| Calyx subequally toothed or lobed, or the 2 upper lobes more or less connate | ... | ... | ... | ... | ... | ... | 112 |
| 112. Pod with a distinct acuminate beak | ... | ... | ... | ... | ... | ... | |
| Pod not beaked | ... | ... | ... | ... | ... | ... | 113 |
| 113. The 2 upper calyx-segments completely connate | | | | | | | |
| | 90. <i>Galactia</i> P. Br. | | | | | | |
| The 2 upper calyx-segments not completely connate | ... | ... | ... | ... | ... | ... | 114 |
| 114. Prostrate or twining herbs | ... | ... | ... | ... | ... | ... | 115 |
| Herbs, undershrubs, or trees, rarely tall shrubs | ... | ... | ... | ... | ... | ... | 116 |
| 115. Style beardless | ... | ... | ... | ... | ... | ... | |
| Style bearded | ... | ... | ... | ... | ... | ... | |
| | 85. <i>Glycine</i> Linn. | | | | | | |
| | 97. <i>Vigna</i> Savi | | | | | | |
| 116. Herbs or undershrubs, rarely tall shrubs; pod 2-valved | | | | | | | |
| | 63. <i>Tephrosia</i> Pers. | | | | | | |
| Trees or tall climbing shrubs; pod indehiscent | | | | | | | |
| | 82. <i>Lonchocarpus</i> H. B. & K. | | | | | | |
| 117. Leaves digitately 3-foliolate | ... | ... | ... | ... | ... | ... | 118 |
| Leaves pinnately 3-foliolate, rarely apparently digitately 3-foliolate owing to the two lowest leaflets resembling foliaceous stipules | ... | ... | ... | ... | ... | ... | 125 |
| 118. Keel spirally contorted with the style and stamens; anthers unequal | | | | | | | |
| | 66. <i>Bolusia</i> Bth. | | | | | | |
| Keel not spirally contorted | ... | ... | ... | ... | ... | ... | 119 |
| 119. Pod divided transversely into segments | ... | ... | ... | ... | ... | ... | |
| Pod 2-valved | ... | ... | ... | ... | ... | ... | 120 |
| 120. Vexillum eared at the base | ... | ... | ... | ... | ... | ... | 121 |
| Vexillum not eared at the base | ... | ... | ... | ... | ... | ... | 123 |
| 121. Style bearded above | ... | ... | ... | ... | ... | ... | |
| Style glabrous | ... | ... | ... | ... | ... | ... | 122 |
| 122. Twining or prostrate plants | ... | ... | ... | ... | ... | ... | |
| Erect shrubs | ... | ... | ... | ... | ... | ... | |
| | 93. <i>Rhynchosia</i> Lour. | | | | | | |
| | 95. <i>Flemingia</i> Roxb. | | | | | | |
| 123. Keel spurred | ... | ... | ... | ... | ... | ... | |
| Keel not spurred | ... | ... | ... | ... | ... | ... | 124 |
| | 60. <i>Indigofera</i> Linn. | | | | | | |

124. Leaves and calyx gland-dotted ... **61. Psoralea** Linn.
 Leaves and calyx not gland-dotted ... **57. Trifolium** Linn.
125. Style bearded or vexillum with prominent appendages ... 126
 Style beardless ... 129
126. The 2 upper calyx-segments completely fused **99. Dolichos** Linn.
 The 2 upper calyx-segments sometimes more or less connate but not completely fused ... 127
127. Beak of keel spirally contorted ... **96. Phaseolus** Linn.
 Keel not spirally contorted ... 128
128. Vexillum eared at the base ... **97. Vigna** Savi.
 Vexillum not eared at the base ... **63. Tephrosia** Pers.
129. Stigma flattened and oblique, ciliate **98. Sphenostylis** E. Mey.
 Stigma not as above ... 130
130. Style linear with membranous margins **100. Alistilus** N. E. Br.
 Style not as above ... 131
131. Beak of keel spirally twisted ... 132
 Keel not spirally twisted ... 133
132. Calyx 2-lipped; upper lip large, truncate or 2-lobed **91. Canavalia** DC.
 Calyx not as above ... **96. Phaseolus** Linn.
133. Vexillum eared at the base ... 134
 Vexillum not eared at the base; if subauricled, then twining herbs with a truncate calyx ... 139
134. Ovules 2, rarely 1 ... 135
 Ovules 3 or more ... 136
135. Funicle attached at centre of the hilum **93. Rhynchosia** Lour.
 Funicle attached at one end of the hilum **94. Eriosema** Desv.
136. Anthers unequal ... **89. Mucuna** Adans.
 Anthers uniform ... 137
137. Plants glutinous, scented ... **92. Fagelia** Neck.
 Plants not glutinous or scented ... 138
138. Style with a distinct "boss" or other thickening at the base **86. Neorautanenia** Schinz
 Style not thickened at the base ... **90. Galactia** P. Br.
139. Pod deeply constricted between the seeds **88. Erythrina** Linn.
 Pod not deeply constricted ... 140
140. Calyx gibbous at the base, truncate, with the teeth obsolete **84. Dumasia** DC.
 Calyx not truncate ... 141
141. Two lower leaflets close to the branches and resembling large foliaceous stipules ... **58. Lotus** Linn.
 Lower leaflets not resembling large stipules ... 142
142. Stipules adnate to the petiole ... 143
 Stipules not adnate to the petiole ... 145

143. Pod usually spiral and spinose ... **55. Medicago** Linn.
 Pod not spirally twisted 144
144. Pod linear or oblong linear, compressed **54. Trigonella** Linn.
 Pod subglobose or ovoid **56. Melilotus** Adans.
145. Pod articulated between the seeds and breaking up into joints
 77. Desmodium Desv.
 Pod not breaking up into joints 146
146. Wings free from the keel **78. Pseudarthria** W. & A.
 Wings more or less adnate to the keel 147
147. Calyx 2-lipped, with the 2 upper lobes completely fused or 2-toothed
 99. Dolichos Linn.
 Calyx not as above 148
148. Petals clawed, silky-villous without ... **63. Tephrosia** Pers.
 Petals not distinctly clawed, glabrous 149
149. Pod septate between the seeds ... **85. Glycine** Linn.
 Pod not septate between the seeds ... **90. Galactia** P. Br.
150. Leaves fascicled **47. Aspalathus** Linn.
 Leaves digitately 4- or more-foliolate 151
151. All or 4 of the petals adnate to the staminal-tube, stipules adnate to the
 petiole **57. Trifolium** Linn.
 Petals free from the staminal-tube 152
152. Leaves and calyx gland-dotted; ovules 1, very rarely ovules 2—3
 61. Psoralea Linn.
 Leaves and calyx not gland-dotted, rarely with pellucid dots but then
 ovules many 153
153. Pod articulating into segments 154
 Pod 2-valved 155
154. Flowers solitary or in interrupted spikes; stipules subfoliaceous;
 anthers unequal **76. Zornia** J. F. Gmel.
 Flowers in racemes or panicles; stipules not subfoliaceous; anthers
 uniform **77. Desmodium** Desv.
155. Stamens diadelphous; keel spurred ... **60. Indigofera** Linn.
 Stamens monadelphous; keel not spurred 156
156. Keel not beaked; pod compressed, rarely turgid
 42. Lotononis E. & Z.
 Keel beaked, pod turgid or inflated ... **51. Crotalaria** Linn.

3443 **1. ALBIZZIA** Durazzini, in Magazz. Toscan., vol. 3, pt. 4, p. 11
 (1772)

(*Zygia* P. Br., of the Fl. Cap.)

Flowers often 5-merous, bisexual, rarely unisexual with a few bisexual flowers. *Calyx-tube* campanulate or tubular; lobes or teeth shorter than the tube. *Corolla-tube* about as long as, or longer than, the calyx, funnel-shaped; lobes 5, rarely 4, shorter than the tube. *Stamens* many, much exerted, connate into a tube below; filaments filiform; anthers petlate on the filaments; thecae opening upwards. *Ovary* somewhat lanceolate, oblong, or

linear-oblong in outline, passing into the style; ovules several; style filiform, somewhat longer than the stamens; stigma simple. *Pod* flattened, straight, indehiscent or 2-valved, often oblong, sometimes over 10 in. long and $1\frac{1}{2}$ in. broad, few- or several-seeded. *Seeds* ovate or orbicular, compressed with a filiform funicle.

Shrubs or trees, unarmed; leaves bipinnate, with the leaves small and many-jugate or ample and few-jugate; main nerve of pinnae usually unilateral; glands on the petiole and pinnae more or less conspicuous; stipules setaceous or obsolete or rarely large and membranous; peduncle axillary, paniculate at the apices of the branches; flowers in globose heads or in cylindric spikes.

Species about 200, found in the warmer regions of Asia, Africa, and Australia; 8 species in South Africa, found in the Transvaal and Natal. (Type: *A. julibrissin* Durazz.)

3446 2. ACACIA Willd., Sp. Pl., vol. 4, pt. 2, p. 1049 (1806)

Flowers 5—4-merous, rarely 3-merous, often sessile, bisexual, rarely unisexual with a few bisexual flowers. *Calyx* campanulate, toothed or lobed or rarely with sepals free, rarely absent. *Petals* more or less joined or rarely free, very rarely 0. *Stamens* many, exserted, free or connate at the base into a very short cup or into a very short and irregular perigynous disc. *Ovary* sessile or stalked, 2 to many-ovuled; style filiform; stigma terminal, small. *Pod* ovate, oblong, or linear, straight, curved, or variously contorted, flat, convex, or terete, membranous, coriaceous, or woody, 2-valved or indehiscent. *Seeds* compressed, with a filiform funicle or with the funicle variously dilated into a fleshy aril.

Trees or shrubs or very rarely herbs, unarmed, thorny or spiny; leaves bipinnate; the leaflets often small and many-jugate or with the petiole expanded to form (in the Australian species) phyllodes, with glands often present on the petiole; stipules spinescent or inconspicuous, rarely membranous; flowers in globose heads or in cylindric spikes; peduncles axillary, solitary or fascicled or paniced at the apex of the branches.

Species about 1,070 chiefly found in Africa and Australia; 36 species native in South Africa, widely dispersed over the Union and South West Africa. Many Australian species are cultivated and some naturalized in South Africa.

3449 3. MIMOSA Linn., Sp. Pl., ed. 1, p. 516 (1753)

Flowers 4—5-merous, rarely 3—6-merous, bisexual or unisexual with a few bisexual flowers. *Calyx* often minute or almost inconspicuous, rarely with a campanulate tube and shortly toothed, sometimes the calyx-segments pectinate. *Corolla-tube* often tubular-campanulate, longer than the calyx; lobes often linear. *Stamens* free, twice the number of the corolla-lobes or more, or equalling the corolla-lobes in number, exserted; anthers without glands. *Ovary* sessile or rarely stalked, 2- to many-ovuled, sometimes villous; style filiform, sometimes obliquely placed on the ovary; stigma small, terminal. *Pod* oblong or linear, compressed or rarely thickened, membranous or leathery, sometimes transversely articulated, in the South African species densely setose. *Seeds* ovate or orbicular, flat.

Herbs, shrubs, rarely scandent or trees, unarmed or prickly; leaves bipinnate, often sensitive, very rarely not developed or the petiole forming a phyllode; glands sometimes present on the petioles; flowers in globose heads or in cylindric spikes; peduncles axillary, solitary or fascicled.

Species about 600, natives of tropical and subtropical America, Asia, Africa, and Australia; 1 species recorded from South West Africa and Ngamiland. (Type: *M. pudica* Linn.)

3452 4. DICHROSTACHYS Wight & Arn., Prodr., vol. 1, p. 271 (1834)

Flowers 5-merous, sessile; the upper bisexual; the lower neuter. *Calyx* campanulate, shortly toothed or almost truncate. *Corolla-tube* campanulate-tubular, longer than the calyx; lobes valvate, oblong, shorter than the tube. *Stamens* in the bisexual flowers 10, free, shortly exserted; filaments filiform, anthers with stalked glands. *Ovary* subsessile, often oblong in outline, villous, several-ovuled; style longer than the stamens; stigma terminal, truncate. *Pod* linear, compressed, contorted, coriaceous, indehiscent or irregularly dehiscent along the sutures. *Seeds* obovate, compressed.

Shrubs or small trees; branches here and there abbreviated or spiny and leafless; leaves bipinnate; leaflets often small and many-jugate; inflorescence of cylindric peduncled solitary or clustered often drooping spikes; the upper bisexual flowers yellow; the lower neuter flowers rosy or purple.

A genus of about 25 described species found in Africa, Madagascar, Asia, and Australia; 7 species recorded from South Africa, but probably not all valid, recorded from the Transvaal, Swaziland, Natal, and South West Africa. (Type: *D. cinerea* (L.) W. & A.)

3453 5. XEROCLADIA Harv., in Harv. & Sond. Fl. Cap., vol. 2, p. 278 (1861—62)

Flowers 5-merous, sessile. *Calyx-tube* campanulate; lobes longer than the tube, with 1 lobe 3-toothed. *Petals* valvate, linear, free almost to the base. *Stamens* 10, free, shortly exserted; filaments linear; anthers with minute deciduous glands at the apex. *Ovary* shortly stalked, 1- or 2-ovuled, villous; style thick and thickening upwards; stigma truncate. *Pod* shortly stalked, broadly falcate-ovate or semi-orbicular, plano-compressed, 1-seeded, with the lower suture arched and winged. *Seed* ovate, compressed.

A small rigid shrub with somewhat zigzag branches; leaves few, small, bipinnate, with the pinnæ 1—2-jugate; leaflets small, few-jugate; flower-heads globose-capitate; shortly peduncled and axillary; stipules spinescent, recurved.

Endemic; species 1, recorded from Namaqualand and South West Africa. (Type: *X. viridiramis* (Burch.) Taub.= *X. zeyheri* Harv.)

3467 6. ELEPHANTORRHIZA Benth., Hook. Journ. Bot., vol. 4, p. 344 (1842)

Flowers 5-merous, shortly pedicelled. *Calyx-tube* campanulate; lobes ovate, shorter than the tube. *Petals* longer than the calyx, valvate, free almost to the base. *Stamens* 10, free, shortly exserted; filaments linear; anthers oblong, with deciduous stalked glands at the apex. *Ovary* sessile or shortly stalked, many-ovuled; style about as long as the stamens; stigma terminal, small, hollow. *Pod* usually large, somewhat woody, usually straight, flattened, with the sutures remaining closed but the long-persisting rigid valves separating. *Seeds* orbicular, compressed.

Shrubs or small trees, sometimes almost acaulescent and with very much thickened underground parts; leaves bipinnate; leaflets small, many-jugate, with the midrib usually oblique; petioles without glands; inflorescence a cylindric raceme or subspike; peduncles sometimes axillary or sometimes in a short leafless scape.

An African genus of 7 species; 5 species found in the Transvaal, Natal, and South West Africa. (Type: *E. elephantina* (Burch.) S. Keels=*E. burchellii* Benth.)

3468 7. ENTADA Adans., Fam., vol. 2, p. 318 (1763)

Flowers 5-merous, sessile. *Calyx* campanulate, very shortly toothed or almost truncate. *Petals* longer than the calyx, valvate, free, or slightly

cohering, or joined to form a campanulate tube. *Stamens* 10, exserted, free or joined at the base; filaments linear or filiform; anthers oblong, tipped with a deciduous gland. *Ovary* subsessile or on a long stalk, many-ovuled, sometimes villous; style terete; stigma terminal, small, hollow. *Pod* often large, straight or curved, compressed, coriaceous or woody, breaking up into 1-seeded indehiscent portions. *Seeds* orbicular.

Armed or unarmed shrubs, very often scandent; leaves bipinnate; the uppermost pair of pinnae often changed into tendrils; leaflets sometimes large and few or small and numerous; stipules small, setaceous; glands on the petioles 0; flowers in slender spikes.

Species about 45, natives of Africa, tropical America, Formosa, the Malayan and Philippine Islands; 3 species recorded from the Transvaal and Natal. (Type: *E. monostachya* DC. = *Mimosa entada* Linn.)

3471 8. ERYTHROPHLEUM Afzel. ex R. Br., in Tuckey, Congo, p. 430 (1818)

Calyx-tube narrowly campanulate; lobes 5, ovate and shorter than the tube or very short and tooth-like. *Petals* imbricate, 5, sometimes more or less spatulate, inserted on the calyx-tube, free, longer than the calyx-lobes. *Stamens* 10, free, equal or unequal, inserted with the petals; filaments linear, sometimes hairy; anthers uniform, without glands. *Ovary* stalked, many-ovuled, sometimes villous; style thick, much shorter than the ovary; stigma small, terminal, hollow. *Pods* often woody, compressed, 2-valved. *Seeds* ovate, compressed; testa pulpy outside.

Unarmed trees, up to 60 ft. high, leaves bipinnate; pinnae few-jugate; leaflets usually large, leathery, often alternate; flowers small, shortly pedicelled; inflorescence a raceme, with the racemes paniced at the end of the branches; bracts small; bracteoles 0.

Species about 17, natives of Africa, the Seychelles Islands, tropical and eastern Asia, Queensland, and Northern Australia; 2 species recorded from the Transvaal, Swaziland, Zululand, and Natal.

3474 9. BURKEA Benth., in Hook. Icon. Pl., t. 593 (1843)

Calyx-tube shortly campanulate; lobes 5, oblong, longer than the tube. *Petals* 5, subequal, more than twice as long as the calyx, obovate-oblong, imbricate. *Stamens* 10, subequal, shorter than the petals; filaments linear; anthers uniform, oblong, with a sessile apical gland. *Ovary* sessile, shorter than the stamens, 1-ovulate, densely pilose; style thick, much shorter than the ovary; stigma terminal, concave. *Pod* oblong or lanceolate, flattened, somewhat leathery (indehiscent?). *Seed* suborbicular, flattened, not always developed.

Trees or tall shrubs, unarmed, with the young branchlets rusty-tomentose; leaves bipinnate, petioled, with the petioles often rusty-tomentose; pinnae few-jugate; leaflets usually elliptic or elliptic-oblong, leathery; inflorescence an interrupted spike; spikes elongated and simple or paniced; flowers small; bracts small.

An African genus of 2 species; 1 species recorded from the Transvaal. (Type: *B. africana* Hook.)

NOTE.—Hooker figures and describes the ovary as having 2 ovules; in all the specimens I dissected I found only 1 ovule.—E. P. P.

3490 10. COLOPHOSPERMUM Kirk ex Benth., in Trans. Linn. Soc., vol. 25, p. 316 (1865)

Calyx-tube very short or 0; segments or sepals 4–5, imbricate or subvalvate, sometimes tomentose. *Petals* 0. *Disc* sometimes present. *Stamens* 7–22,

free; filaments filiform or linear, glabrous; anthers uniform, oblong. *Ovary* sessile or stalked with the stalk sometimes hairy, oblique, sometimes with a few glands; style terete, often attached laterally on the ovary, about as long as or longer than the ovary; stigma terminal, disc-like. *Pod* stalked; obliquely elliptic or falcate-ovate, compressed or turgid, leathery, 2-valved, sometimes sparsely glandular. *Seed* 1, pendulous, cerebriform, with the funicle dilated into a short fleshy or cup-like aril.

Trees, unarmed; leaves paripinnate; leaflets 1- to many-jugate (unijugate in the African species), leathery, often oblique; stipules small; flowers small; inflorescence a spike or subraceme, with the spikes or racemes in interrupted panicles; bracts small, ovate, caducous, or rarely somewhat large and persistent; bracteoles 0.

Species 2, native of Africa; 2 species recorded from the Transvaal, Ngamiland, and South West Africa. (Type: *C. mopane* Kirk ex Benth.)

NOTE.—Geo. Bentham, in the *Transaction of the Linnean Society*, first drew attention to the possibility of the African plant belonging to a genus distinct from the American *Copaifera*. Dr. J. Léonard, *Bull. Jard. Bot. de L'Etat Bruxelles*, vol. 19, p. 390 (1949), retains the generic name *Colophpermum*. In a letter from Dr. H. Wild of Salisbury, Southern Rhodesia, he informs me that Mr. F. White of the Imperial Forestry Institute, Oxford, considers the change of name a sound one.—E. P. P.

3506 11. SCHOTIA Jacq., Coll., vol. 1, p. 93 (1786)

Calyx-tube leathery, turbinate or subcampanulate; segments 4, strongly imbricate, longer than the calyx-tube. *Petals* 5, inserted in the mouth of the calyx-tube, longer than the calyx-lobes, a little unequal, imbricate, sometimes reduced to minute or linear scales. *Stamens* 10, inserted with the petals, shortly exserted, free or connate at the base; filaments linear; anthers elliptic. *Ovary* somewhat unequal-sided, stalked, with the stalk adnate to the calyx-tube, many-ovuled; style terete, longer than the stamens; stigma terminal, capitate. *Pod* often woody, oblong or broadly linear, often falcate, sometimes beaked, compressed, subdehiscent. *Seeds* orbicular, compressed, with the funicle sometimes small, sometimes expanded into a fleshy cup-like aril.

Small trees or shrubs, unarmed; leaves paripinnate; pinnules large or small; stipules small; flowers red, large, clustered in short panicles; bracts and bracteoles ovate or oblong, membranous, caducous.

An African genus of about 18 species; 9 species in South Africa, extending from the Transvaal, through Natal and the eastern area to the Riversdale district. (Type: *S. speciosa* Jacq. = *S. afra* (Linn.) Thunb.)

3506a 12. UMTIZA Sim, Forests and Forest Fl. of the Cape Colony, p. 205 (1907)

Calyx-tube campanulate; lobes 5, equal, shorter than the tube. *Petals* 5, inserted in the mouth of the calyx-tube, free, slightly imbricate, much longer than the calyx-lobes. *Stamens* 10, inserted with the petals, equal, free; anthers reniform. *Ovary* sessile, 2-ovuled, hairy; style thick, terete, longer than the stamens; stigma truncate. *Pod* compressed, pointed, firmly membranous, 1-seeded, dehiscent. *Seed* oval, somewhat compressed.

A small strongly armed evergreen tree; leaves paripinnate; leaflets 7—12-jugate, oblong or oblong-linear; stipules 0; inflorescence a short panicle, mostly terminal on short lateral twigs.

Endemic; species 1, recorded in forests in the East London and King William's Town districts. (Type: *U. listeriana* Sim)

3507 13. BAIKIAEA Benth., in Benth. & Hook., Gen. Plant., vol. 1, p. 581 (1865)

Calyx-tube turbinate or 0; lobes or sepals 4, leathery, linear-oblong or oblong, with abruptly thinner margins or margins sometimes almost mem-

braneous, sometimes densely hirsute. *Petals* 5, much exceeding the calyx, subequal in length, broadly oblanceolate or obovate-spathulate, narrowed gradually into a long-winged claw or claw broad and crisped on the margins and sometimes hairy, with a distinct, sometimes hairy, longitudinal rib. *Stamens* 10, diadelphous 1, free; filaments usually longer than the petals, stout, terete, silky pilose below; anthers linear-oblong, versatile, dehiscent longitudinally. *Ovary* stipitate or subsessile, with several ovules, densely villous; style longer than the stamens, stout, terete, arising obliquely from the ovary; stigma capitate. *Pod* (in the South African species) woody, widening from the base upwards, obliquely pointed, densely brown-velvety. *Seed* (in the South African species) broadly elliptic, compressed, with the apex of the funicle forming a small white aril.

Unarmed trees; leaflets imparipinnate, leaflets 1—5-jugate, coriaceous, often oblong or elliptic; inflorescence a terminal or axillary raceme or panicle; flowers large; bracts and bracteoles small, caducous.

An African genus of 9 species; 1 species recorded from Ngamiland, Bechuanaland Protectorate, and South West Africa. (Type: *B. insignis* Bth.)

3509 14. AFZELIA Smith, Trans. Linn. Soc., vol. 4, p. 221 (1798)

Calyx-tube usually cylindric; lobes 4, a little unequal, strongly imbricate, sometimes densely hairy without. *Petal* 1, clawed, orbicular or reniform, sometimes 2-lobed; lateral and anterior petals minute, squamiform, or 0. *Stamens* 3—8, free or very shortly connate at the base; filaments linear, shorter than the petal; anthers ovate; staminodes 2—4, small or 0. *Ovary* stalked, with the stalk adnate to the calyx-tube, many-ovuled; style longer or shorter than the stamens, sometimes circinate when young; stigma truncate, subcapitate. *Pod* thick and leathery or woody, obliquely oblong, compressed, 2-valved or subindehiscent, with transverse septa between the seeds. *Seeds* ovoid or ellipsoid, large, with (in the African species) a large cup-like aril or aril absent.

Unarmed trees; leaves paripinnate or rarely subimparipinnate; leaflets leathery, few-jugate; stipules not seen; inflorescence a raceme, with the racemes shortly panicked at the apex of the branches; bracts ovate, concave, reflexed, sometimes deciduous; bracteoles ovate, concave, subpersistent, shorter than the buds.

Species about 44, natives of Africa, tropical Asia, Australia, central and South America; 1 species found in the northern Transvaal and Swaziland. (Type: *A. africana* Sm.)

3528 15. BAUHINIA Linn., Sp. Pl., ed. 1, p. 374 (1753)

Calyx-tube sometimes shortly turbinate, campanulate, or elongate, sometimes glandular; limb spathaceous or 5-toothed, -lobed, or -partite, usually shorter than the tube, often reflexed, sometimes glandular. *Petals* 5, a little unequal, usually much larger than the calyx, sometimes long-clawed, with the odd petal sometimes strongly 2-keeled at the base. *Stamens* 10, free or connate, shorter or longer than the petals, all or some fertile, some reduced to staminodes; filaments usually linear, more rarely flattened and lanceolate, sometimes with a ring of small acute scales at the base, sometimes hairy below; anthers ovate, oblong, or linear, versatile. *Ovary* stalked, rarely subsessile, with the stalk free in or adnate to the calyx-tube, 2 to many-ovuled, glabrous or variously hairy; style terete or semi-terete, longer or shorter than the stamens; stigma terminal, small or variously dilated, often peltate or oblique or truncate. *Pod* leathery, subfleshy, somewhat membranous, or woody, oblong, linear, or ovate, straight, oblique, or rarely falcate, sometimes long-stalked, indehiscent or 2-valved, sometimes septate between the seeds. *Seeds* orbicular or ovate, compressed.

Trees or shrubs, erect or scandent, with the extremities of the inflorescence occasionally cirrhmose; leaves sometimes simple, entire, or 2-lobed, sometimes distinctly 2-foliolate, small or large (9 in. diam.); stipules various, often small, caducous; inflorescence a raceme; racemes terminal or rarely axillary or arranged in ample terminal panicles or corymbs; flowers often large.

Species about 493, found in all tropical countries, 10 species recorded from South Africa extending from the Transvaal, through Swaziland, Natal, and the eastern district to the East London district; also found in South West Africa. (Type: *B. divaricata* Linn.)

3530

16. *DIALIUM* Linn., Mant., vol. 1, p. 3 (1767)

Calyx-tube very short or almost 0; lobes 5—7, strongly imbricate, herbaceous or petaloid. *Petals* 1—5, shorter than the calyx-lobes or sometimes petals 0. *Stamens* usually 2—3, sometimes 5—10, usually about as long as the calyx-lobes, filaments terete; anthers large oblong or oblong-ovate. *Disc* sometimes present. *Ovary* sessile or stalked, 2-ovuled, frequently tomentose; style short, subulate or terete and longer than the calyx; stigma terminal, small. *Pod* ovate-orbicular, somewhat compressed or ovoid-globose, indehiscent; exocarp hard or fragile; endocarp often pulpy. *Seed* 1, more or less compressed.

Unarmed trees; leaves imparipinnate; leaflets usually about 2—4-jugate, leathery or submembranous, medium-sized; stipules small or inconspicuous; inflorescence an axillary or terminal paniced cyme; flowers small.

Species about 55, mostly African; a few recorded from Madagascar and the Malay Peninsula; 2 species in South Africa found in Zululand and the northern Kalahari. (Type: *D. indum* Linn.)

3536

17. *CASSIA* Linn., Sp. Pl., ed. 1, p. 376 (1753)

Calyx-tube very short or 0; lobes 5, imbricate, sometimes unequal, orbicular, ovate, or lanceolate, rounded or sometimes very acute at the apex, glabrous or hairy, sometimes with bulbous-based hairs. *Petals* 5, imbricate, often unequal, usually much larger than the calyx, often obovate, sometimes long-clawed. *Stamens* 10, all perfect and subequal, or very unequal, or 3 or 6 wanting or imperfect; filaments linear or sometimes flattened; anthers uniform, often curved, linear or quadrate, or the 2 or 3 anterior larger, dehiscing by terminal pores or longitudinally. *Ovary* sessile or stalked, frequently curved, few- to many-ovuled, villous or glabrous; style shorter or longer than the ovary; stigma terminal truncate. *Pod* terete or flattened, sometimes long-linear, frequently beaked, indehiscent or 2-valved, with or without transverse septa, rarely winged or appendaged, sometimes finely villous. *Seeds* flattened at right angles to or parallel with the valves, transversely or rarely longitudinally disposed in the pod.

Trees, shrubs, or herbs; leaves paripinnate or rarely reduced to a petiolar phyllode; leaflets frequently 5—9-jugate, usually broad, more rarely small and linear, glabrous or hairy; common petiole frequently with sessile or stipitate glands; stipules various; inflorescence an axillary or terminal raceme or corymb, or flowers in fascicles, occasionally clustered or solitary in the leaf-axils; flowers yellow or red, rarely white.

Species about 700, found in all warm parts of the world; 13 species recorded from South Africa, ranging from the northern Transvaal, through Natal and the eastern districts to the Riversdale district; also found in parts of the Orange Free State, in the Barkly West district, Bechuanaland, and South West Africa. (Type: *C. fistula* Linn.)

3551 18. PARKINSONIA Linn., Sp. Pl., ed. 1, p. 375 (1753)

Calyx-tube campanulate or basin-shaped; lobes 5, equal or a little unequal, narrowly imbricate or subvalvate, longer than the tube. *Petals* 5, spreading, longer than the calyx, sometimes unequal and with the claw of the largest petal with an appendage. *Stamens* usually 10, sometimes fewer, free; filaments often flattened and villous or villous only at the base; anthers uniform, elliptic. *Ovary* shortly stalked, many-ovuled, glabrous or hairy; style terete, about $\frac{1}{2}$ as long as the ovary or several times shorter than the ovary; stigma terminal and hollow or slightly oblique. *Pod* linear, twisted or almost straight, sub-2-valved, sometimes constricted between the seeds. *Seeds* oblong.

Trees or shrubs, usually spiny; leaves pinnate with the common petiole sometimes flattened, often ending in a spine; leaflets very small, sometimes scarcely developed; stipules often short, spinescent; inflorescence a short axillary raceme; bracts small, caducous; bracteoles 0.

Species 8, found in the warm parts of America; 1 species recorded from South West Africa, Namaqualand, and the Kenhardt, Kuruman, Upington, and Prieska districts. (Type: *P. aculeata* Linn.)

3552 19. HAEMATOTYLON Linn., Sp. Pl., ed. 1, p. 384 (1753)

Calyx sometimes with stalked glands; tube short, sometimes shallowly campanulate; lobes 5, a little unequal or 4 lobes equal, oblong and obtuse, and fifth lobe boat-shaped, longer than the tube. *Petals* 5, oblong or obovate, a little unequal, imbricate. *Stamens* 10, free, sometimes unequal; filaments usually linear and narrowing upwards, pilose at the base; anthers uniform, often elliptic. *Ovary* shortly stalked, 2—3-ovuled, sometimes glandular; stigma small, terminal, sometimes hollow. *Fruit* lanceolate or oblong, flattened, membranous. *Seeds* transversely oblong.

Trees or shrubs; leaves simply paripinnate or with the lower jugae bipinnate; stipules in some places spinescent, in other places small and deciduous; flowers small or medium-sized; inflorescence a lax axillary or terminal raceme; bracts minute; bracteoles 0.

Species 3, found in Africa, central America, and east India; 1 species recorded from South West Africa. (Type: *H. campechianum* Linn.)

3553 20. PTEROLOBIUM R. Br., in Salt, Abyss., App. 64 (1814)

Calyx-tube shallowly basin-shaped; lobes 5, longer than the tube. *Petals* 5, spreading, imbricate, equal or a little unequal, as long as the calyx. *Stamens* 10, free, sometimes declinate, longer than the petals, sometimes, subequal; filaments terete, villous at the base or almost glabrous; anthers uniform, more or less quadrate in outline. *Ovary* sessile, 1-ovuled, villous; style elongated or much shorter than the ovary, clavate at the apex; stigma terminal, truncate or concave. *Pod* sessile, compressed, produced at the apex into a membranous oblique oblong or falcate wing. *Seed* pendulous, compressed.

Trees or scandent shrubs, armed with recurved spines; leaves bipinnate; leaflets numerous, small; stipules small or inconspicuous; inflorescence a raceme, sometimes dense and elongated, laxly paniced at the apex of the branches; flowers small; bracts caducous; bracteoles 0.

Species 10—12, found in all tropical regions; 1 species recorded from the Waterberg district of the Transvaal. (Type: *P. lacerans* R. Br.)

3557 21. HOFFMANNSEGGIA Cav., Icon., vol. 4, p. 63, t. 392 (1797)
(*Melanosticta* DC.)

Calyx-tube shortly campanulate, often with black glands; lobes 5, oblong or lanceolate, a little unequal, longer than the tube, slightly imbricate or valvate, often with black glands. *Petals* 5, not all equal, oblong or obovate, equalling or longer than the calyx-lobes, spreading, imbricate. *Stamens* 10, free, shorter than the petals, somewhat declinate; filaments linear, often glandular at the base, sometimes villous; anthers uniform. *Ovary* subsessile, few- to many-ovuled; style usually terete, often incurved and clavate at the apex; stigma terminal, usually small, concave or sometimes hollow. *Pod* subsessile, linear, oblong, or ovate, straight or often falcate, compressed, 2-valved; valves membranous or slightly leathery, often glandular or covered with short plumose setae. *Seeds* transversely or obliquely ovate.

Herbs or low undershrubs, sometimes almost acaulescent, often glandular, sometimes with short spines; roots sometimes thickened; leaves bipinnate; leaflets usually small; stipules small, sometimes spinescent; inflorescence a terminal raceme or the racemes opposite the leaves; bracts deciduous; bracteoles 0.

Species 47, found in Texas, Mexico, and Africa; 4 species in South Africa, extending from the Transvaal into Natal and Griqualand East and westwards through Bechuanaland into South West Africa.

3559 22. CAESALPINIA Linn., Sp. Pl., ed. 1, p. 380 (1753)
(*Guilandina* Juss. of the Fl. Cap.)

Calyx-tube shortly campanulate; lobes 5, longer than the tube, imbricate. *Petals* 5, not all equal, orbicular or rarely oblong, longer than the calyx, spreading, strongly imbricate. *Stamens* 10, free, declinate; filaments linear, often villous or glandular at the base; anthers uniform. *Ovary* sessile, few- or several-ovuled; style terete, sometimes filiform, rarely clavate at the apex; stigma terminal, truncate, concave or hollow. *Pod* ovate, oblong, lanceolate, sometimes falcate, compressed. *Seeds* variously shaped.

Trees or shrubs, sometimes scandent, unarmed or armed with a few spines; leaves bipinnate; leaflets sometimes small, numerous or few, sometimes large, herbaceous or coriaceous; stipules various; inflorescence a raceme; racemes lax in the axils of the upper leaves or paniced at the apex of the branches; flowers often large; bracts small or rarely large and membranous, often caducous; bracteoles 0.

Species about 184, found in all warm regions; 3 species recorded from South West Africa. (Type: *C. brasiliensis* Linn.)

3561 23. PELTOPHORUM Walp., Rep., vol. 1, p. 811 (1842)

Calyx-tube shortly campanulate; lobes 5, imbricate, subequal, longer than the tube. *Petals* 5, subequal, orbicular or obovate, longer than the calyx, strongly imbricate. *Stamens* 10, free, declinate; filaments pilose at the base, sometimes glandular; anthers uniform, versatile. *Ovary* sessile or shortly stalked, 2 to many-ovuled; style terete; stigma broadly peltate. *Pod* oblong-lanceolate, rarely elongated, compressed, indehiscent. *Seeds* 1—2 or rarely 3—4, compressed.

Tall trees, unarmed; leaves bipinnate; leaflets small, numerous; stipules small, caducous; inflorescence a raceme; racemes paniced at the apex of the branches; bracts narrow or lanceolate, often caducous; bracteoles 0.

Species about 16, found in all tropical regions; 1 species found in the Transvaal, Zululand, Natal, Bechuanaland, and South West Africa. (Type: *P. vogelianum* Walp.)

3573 24. CORDYLA Lour., Fl. Cochinch., p. 411 (1790)

Flowers bisexual, sometimes male. *Calyx-tube* campanulate, often somewhat leathery; lobes 3, usually broad, about as long as the tube. *Petals* 0. *Stamens* sometimes orange-coloured, many, inserted in the throat of the calyx-tube, longer than the calyx; filaments linear, connate below, glabrous; anthers small, uniform. *Ovary* leathery, on a long gynophore, ellipsoid, with 2 to few ovules; style terete, tapering upwards; stigma terminal, simple. *Fruit* stalked, drupaceous, sometimes as large as a lemon, and yellow when ripe, sometimes 2-seeded.

Usually large trees, unarmed; leaves imparipinnate; leaflets usually flat and oblong, shortly stalked, many-jugate; inflorescence a short axillary raceme.

An African genus of 4 species; 1 species recorded from Natal and Komati Poort and Barberton in the Transvaal. (Type: *C. africana* Lour.)

3580a 25. PSEUDOCADIA Harms, Engl. Bot. Jahrb., vol. 33, p. 162 (1902)

Calyx-tube campanulate, almost truncate or with very short lobes, hairy. *Petals* 5, inserted at the base of the calyx-tube, unequal, lanceolate or elliptic, with a broad linear claw, imbricate, much longer than the calyx. *Stamens* 10, equalling the petals and inserted with them, connate at the base, with the vexillary stamen free; filaments linear, glabrous; anthers uniform, oblong. *Disc* annular. *Ovary* stalked, linear in outline, with few to several ovules; style very short or almost 0; stigma lateral. *Fruit* shortly stalked, drupaceous, about the size of a hazel nut or larger, sometimes shortly beaked. *Seed* solitary, testa black.

Trees; leaves imparipinnate; leaflets coriaceous, elliptic or elliptic-lanceolate 3—4-jugate; stipules very small; inflorescence an axillary raceme, shorter or as long as the leaves; bracts small, caducous.

An African genus of 2 species; 1 species found in Natal and the Waterberg and Zoutpansberg districts of the Transvaal. (Type: *P. anomala* (Vatke) Harms = *Cadia anomala* Vatke)

3602 26. SOPHORA Linn., Sp. Pl., ed. 1, p. 373 (1753)

Calyx-tube tubular-campanulate, very shortly toothed, sometimes tomentose. *Standard* broadly obovate or orbicular, erect or spreading; wings oblong-oblique; keel oblong, suberect, with its petals usually imbricate or cohering along the back. *Stamens* free or rarely subconnate at the base; filaments linear; anthers versatile, sometimes with a small blunt apical gland. *Ovary* shortly stalked, several- or many-ovuled, sometimes densely villous; style terete, somewhat incurved; stigma small, terminal. *Pod* moniliform, terete or slightly compressed, fleshy, leathery, or woody, indehiscent or scarcely tardily 2-valved, often with a long beak. *Seeds* obovoid or globose.

Trees, shrubs, or rarely perennial herbs; leaves imparipinnate; leaflets sometimes numerous and small, sometimes few and large, sometimes densely tomentose; inflorescence a simple terminal raceme or a leafy terminal panicle; bracts linear, minute or 0; bracteoles often absent.

Species about 73, found in all warm regions; 1 species recorded from Zululand. (Type: *S. tomentosa* Linn.)

NOTE.—In a specimen (National Herbarium No. 26810) I examined, I found 3 flowers that had developed 2 carpels each.—E. P. P.

3607 27. CALPURNIA E. Mey., Comm., Pl. Afr. Austr., p. 2 (1835)

Calyx-tube campanulate; lobes 5, tooth-like, with the 2 upper lobes smaller and partly connate. *Vexillum* clawed, with the claw deeply channelled and

the limb reflexed and bilobed; alae clawed, oblong, obtuse; carina clawed, usually plano-convex in outline, obtuse. *Stamens* 10, free or connate at the base; filaments glabrous or rarely pubescent; anthers small, oblong. *Ovary* stalked, several-ovuled, glabrous, villous, or ciliate on the sutures; style arcuate; stigma small, capitate. *Pod* stalked, usually broadly linear, sometimes with a narrow wing on the ventral suture, tipped with the remains of the style.

Shrubs or small trees; branches glabrous or pubescent or more rarely villous; leaves imparipinnate with 3 to many pairs of leaflets, leaflets usually pubescent, more rarely softly tomentose, obtuse or retuse at the apex, frequently mucronate; inflorescence racemose, axillary or terminal, frequently arranged in a paniculate manner, longer or shorter than the leaves; few- to many-flowered; flowers yellow.

An African genus of 7 species; 6 species recorded from South Africa extending from the Transvaal through Natal, Basutoland, the eastern Orange Free State, and the eastern districts to the Albany district. (Type: *C. intrusa* E. Mey. = *Virgilia intrusa* R. Br.)

3607a **28. BOLUSANTHUS** Harms, in Fedde Repert. Nov. Sp., vol. 2, p. 14 (1906)

Calyx-tube campanulate, silky; lobes 5, ovate-lanceolate, about as long as the tube, with the 2 upper lobes connate high up. *Petals* much exceeding the calyx; standard semi-orbicular, slightly lobed at the apex, clawed at the base; wings oblong, obtuse, clawed, eared at base of limb; carina as long as the wings, clawed, eared at base of limb. *Stamens* free, subequal; filaments linear, hairy at the base; anthers elliptic, versatile. *Ovary* subsessile, linear-oblong in outline, 4—5-ovuled, silky; style terete, curved; stigma small, capitate, hairy. *Pod* usually linear, more rarely oblong-linear, compressed. *Seeds* 1—4.

A tree; leaves imparipinnate, 3—6-jugate; leaflets opposite or alternate, usually lanceolate, acuminate; inflorescence a lax terminal raceme; flowers blue; bracts and bracteoles subulate, deciduous.

Endemic; species 1, found in the north-eastern Transvaal and Swaziland. (Type: *B. speciosus* (Bolus) Harms = *Lonchocarpus speciosus* Bolus)

3608 **29. VIRGILIA** Lam., Illustr., vol. 2, p. 454, t. 326 (1793)

Calyx 2-lipped, tomentose; tube basin-shaped, somewhat compressed, intrude at the base; upper lip 2-toothed, longer than the tube; lower lip 3-toothed, longer than the tube. *Standard* suborbicular, strongly reflexed; wings falcate, clawed; keel somewhat shorter than the wings, incurved, beaked, with the 2 petals clawed. *Stamens* 10, free; filaments linear, narrowing upwards, villous; anthers small, versatile. *Ovary* shortly stalked, few-ovuled, densely villous; style curved, semi-terete, narrowing upwards; stigma small, terminal, with a few hairs. *Pod* linear or linear-oblong, leathery, 2-valved, densely tomentose. *Seeds* black, elliptic in outline, biconvex.

A tree; leaves imparipinnate; leaflets up to 13-jugate, linear, linear-lanceolate, or lanceolate, with a short apical mucro; stipules linear, acuminate; inflorescence an axillary and terminal raceme, massed at the ends of the branches; flowers pink, showy; bracts small, caducous; bracteoles 0.

Endemic; species 1, extending from the Cape to the Uitenhage district. (Type: *V. oroboides* (Berg.) Salter = *Sophora oroboides* Berg. = *V. capensis* Lam.)

3612 **30. BAPHIA** DC., Prodr., vol. 2, p. 424 (1825)

Calyx splitting into 2 reflexed lobes or down one line, retuse at the base, often pilose; lobes entire or 2-toothed. *Petals* subsessile or clawed; standard orbicular; wings oblong or obovate; keel slightly incurved, obtuse. *Stamens*

10, free; filaments linear, usually glabrous; anthers uniform, elliptic, basifixed. *Ovary* sessile or subsessile, 1—4-ovuled, often villous; style incurved; stigma small, terminal. *Pod* leathery, linear or lanceolate, sometimes falcate, usually acuminate, flattened, 2-valved. *Seeds* suborbicular.

Trees or shrubs; leaves simple, usually large, usually elliptic or ovate or ovate-lanceolate, or oblong, or orbicular; inflorescence an axillary and terminal raceme, sometimes paniced or flowers fascicled in the leaf-axils; bracts small; bracteoles large but deciduous, sometimes shorter than the calyx.

Species 77, natives of Africa and Madagascar; 2 species in South Africa, found in Swaziland, Natal, Bechuanaland, Ngamiland, and South West Africa. (Type: *B. nitida* Lodd.)

NOTE.—In a specimen (National Herbarium No. 26812) I examined, I found a flower that had developed 2 carpels.—E. P. P.

3620 31. CYCLOPIA Vent., Dec. Gen. Nov., p. 8 (1808)

Calyx-tube shallow, truncate and intrude at the base; lobes usually triangular and slightly longer than the tube. *Vexillum* suborbicular, plaited at the base, with a short claw; wings oblong, with a transverse fold; keel incurved, obtusely beaked, with a small triangular pocket. *Stamens* free or slightly connate at the base; filaments dilated. *Ovary* sessile or shortly stalked, several-ovuled, glabrous. *Pod* oblong, compressed, with leathery valves.

Erect branched shrubs; leaves palmately 3-foliolate; leaflets narrow-linear, lanceolate, or very rarely ovate, frequently with revolute margins, glabrous or pubescent; stipules 0; flowers yellow, pedicelled or subsessile, solitary, axile; bracts 2, rarely 3.

Endemic; species 12, mainly in the south-western districts of the Cape Province but extend to the Uitenhage district.

3621 32. PODALYRIA Lam., Illustr., vol. 2, p. 454, t. 327, figs. 3, 4 (1793)

Calyx shaggy, silky-pilose, or pilose; tube broader than long, shallow, intrude at the base, sometimes split on one side; lobes longer than the tube, usually lanceolate, sometimes acuminate, often with the 2 upper lobes connate higher up than the lower. *Vexillum* suborbicular or oblong-obovate, often bilobed, with a deeply concave linear claw; wings elliptic, oblong, obovate, or obovate-oblong, with a curved linear claw; keel usually convex on one margin and straight on the other, with a straight flat claw. *Stamens* 10, connate at the base; filaments usually flattened at the base, glabrous. *Disc* variously shaped. *Ovary* densely villous or shaggy; ovules 6—18 in 2 rows; style hairy at the base; stigma small, capitate. *Pod* ovoid or oblong in outline, turgid, usually shaggy; valves leathery. *Seeds* with an appendage

Silky pubescent or villous shrubs; leaves alternate, simple, linear and much recurved, oblong, lanceolate, elliptic, or suborbicular, sometimes subcordate at the base, often densely hairy beneath and frequently above, usually hairy when young, more rarely glabrous; flowers 1—2- (rarely 3—4-) nate on axillary peduncles.

Endemic; species 25, mostly in the south-western districts of the Cape Province but extend through the coastal belt into Natal. (Type: *P. biflora* (Retz.) Lam.)

3642 33. LIPARIA Linn., Mant., vol. 3, p. 156 (1771)

Calyx sometimes densely pilose; tube shortly campanulate, intrude at the base; lobes much longer than the tube; the 4 upper lobes lanceolate, acute, usually joined high up; the lower lobe much larger than the others, sometimes as large as the vexillum, petaloid. *Vexillum* usually elliptic-oblong, sometimes bilobed; wings oblong; keel narrow, subacute. *Stamens* diadel-

phous, unequal; filaments linear, glabrous; anthers linear or ovate, sometimes subsagittate. *Ovary* sessile or shortly stalked, few-ovuled, densely villous; style subterete, as long as or slightly longer than the keel, villous below; stigma small, terminal. *Pod* ovate or oblong in outline, oblique, compressed, 2-valved. *Seeds* with an appendage.

Shrubs; leaves coriaceous, simple, alternate, usually lanceolate, pungent, palmately nerved; stipules 0; flowers usually yellow, massed in terminal heads; bracts large, imbricate, clasping the flowers.

Endemic; species 4, found in the south-western districts of the Cape Province and extending to the Riversdale district.

3643 34. PRIESTLEYA DC., Mem. Legum., p. 190 (1825)

Calyx villous; tube campanulate-compressed, sometimes intrude at the base; lobes subequal, ovate or oblong-ovate, obtuse or acute, longer than the tube. *Vexillum* suborbicular or obovate, with a short broad claw; wings plano-convex in outline, eared, shortly clawed; keel incurved, usually beaked, clawed. *Stamens* diadelphous; filaments linear-oblong; anthers subuniform. *Ovary* sessile, 2- to many-ovuled, glabrous or villous; style terete, as long as the keel, often densely pilose, sometimes with a short spur at the apex; stigma small, terminal. *Pod* oblong or broadly linear in outline, oblique, 2-valved, beaked, often villous.

Shrubs, often silky villous; leaves simple, alternate, sometimes imbricate, linear; stipules 0; inflorescence a terminal head or raceme, with few flowers or rarely flowers axillary; bracts ovate, lanceolate, or the inner setaceous; bracteoles setaceous, caducous.

3644 35. AMPHITHALEA E. & Z., Enum., p. 167 (1836)

(*Lathriogyne* E. & Z.)

Calyx usually hairy; tube campanulate or tubular; lobes ovate-lanceolate or lanceolate, acute, sometimes acuminate; more rarely very short and obtuse; the 2 upper broader or connate high up. *Standard* usually obovate, frequently bilobed, clawed; wings oblong, clawed, with the claw often long and linear; keel straight, usually shorter than the wings, rarely shorter than the calyx, straight, obtuse, gibbous or saccate at the base, clawed, with the claw often long and linear. *Stamens* diadelphous, equal or unequal; filaments linear, glabrous; anthers often elliptic. *Ovary* sessile or shortly stalked, usually 1-ovuled but sometimes up to 7 ovules, villous; style semi-terete, villous below; stigma terminal, sometimes slightly capitate. *Pod* ovate or oblong in outline, often acute, compressed, 2-valved. *Seeds* 1—4, appendaged.

Small shrubs, silky villous or villous, rarely glabrous, sometimes heath-like; leaves simple, alternate, flat or with recurved margins, ovate, obovate, lanceolate, or linear, sometimes mucronate; stipules 0; flowers purple or rosy, with the tip of the keel dark-coloured, axillary and subsessile, often 2-nate, sometimes crowded into a leafy spike, more rarely massed in a head; bracts 1.

Endemic; species 16 or 17, mostly found in the south-western districts of the Cape Province, but extending eastwards as far as the Cathcart district.

NOTE.—In *Lathriogyne* E. & Z. the keel is shorter than the calyx, but this is also found in some species of *Amphithalea* E. & Z., other characters agree and the 2 genera cannot be separated. The 2 species described under *Lathriogyne* should be renamed as follows: *A. parvifolia* (E. & Z.) Phill.; *A. candicans* (E. & Z.) Phill.—E. P. P.

3646 36. COELIDIUM Vogel ex Walp., Linnaea, vol. 13, p. 472 (1839)

Calyx pubescent or villous; tube campanulate or tubular-campanulate; lobes deltoid, ovate or oblong, acute or obtuse, with the 2 upper lobes

connate high up. *Vexillum* elliptic or suborbicular, shortly and broadly clawed; wings oblong or oblong-linear, with a long-linear claw, sometimes prominently eared at the base; keel somewhat straight, oblong-linear, obtuse, with a long-linear claw, with a pocket on either side. *Stamens* monadelphous, with the staminal-tube sometimes short or adnate to lower portion of calyx-tube; filaments narrow-linear; anthers small, oblong or elliptic. *Ovary* sessile or shortly stalked, 1-ovuled, villous; style incurved, semiterete, stigma terminal. *Pod* ovate or lanceolate in outline, often beaked, 2-valved, villous. *Seeds* appendaged.

Silky villous, more rarely glabrous, ericoid shrubs, rarely with branches ending in a spine; leaves simple, sometimes remote, usually linear, more rarely ovate-lanceolate or oblong, sometimes pungent, usually hairy, more rarely glabrous; stipules 0; flowers usually subsessile and clustered in the axil of the upper leaves, rarely 2-flowered on long peduncles or in small heads.

Endemic; species 15, mostly in the south-western districts of the Cape Province, but extend to the Riversdale district.

3647 37. WALPERSIA Harv., Fl. Cap., vol. 2, p. 26 (1861)

Calyx 5-lobed; lobes unequal; the 2 upper broader. *Petals* adnate to the staminal-tube; vexillum ovate; wings oblong; keel subincurved, somewhat acute, with a pocket on either side. *Stamens* monadelphous, with the staminal-tube sometimes short; anthers unequal. *Ovary* sessile, 2-ovuled; style filiform. *Pod* not seen.

A small villous branched shrub; leaves simple, with revolute margins; stipules 0; flowers pedicelled, axillary.

Endemic; species 1, known only from the south-western area of the Cape Province. (Type: *W. burtonioides* Harv. and Sond.)

3653 38. BORBONIA Linn., Sp. Pl., ed. 1, p. 707 (1753)

Calyx usually pilose; tube campanulate or tubular-campanulate; lobes equal, rarely the abaxial lobe longer, shorter or longer than the tube, ovate or lanceolate, often acuminate, acute or pungent. *Petals* usually hairy, rarely all glabrous; vexillum obovate, subsessile or distinctly clawed; wings usually oblong or oblong-linear, shortly clawed or with a long linear claw; keel incurved, clawed, usually saccate or gibbous. *Stamens* monadelphous, unequal, with the staminal-tube sometimes adnate to the claw of the wings and keel; anthers frequently different. *Ovary* sessile, rarely subsessile, 1- to many-ovuled, usually glabrous, more rarely villous; style curved, semiterete; stigma terminal, small, capitate. *Pod* linear or lanceolate, compressed, acute, equal at the base, very rarely obliquely ovate at the base. *Seeds* not appendaged.

Shrubs or suffrutescent, rarely decumbent, glabrous, rarely villous; leaves simple, rigid, usually pungent at the apex, often cordate or amplexicaul at the base, sometimes perfoliate, many-nerved, smooth or toothed on the margins; flowers yellow, often turning reddish with age, axillary or terminal, solitary or grouped in short racemes, subheads, or subumbels; bracts and bracteoles often setaceous.

Endemic; species 15 or 16, found mostly in the south-western districts of the Cape Province and extend to the Albany district; 1 species recorded from the Khamiesberg in South West Africa. (Type: *B. cordata* Linn.)

3654 39. RAFNIA Thunb., Nov. Gen. Pl., vol. 10, p. 144 (1800)

Calyx glabrous; tube usually campanulate; lobes longer or shorter than the tube, usually lanceolate or lanceolate-ovate, acuminate, rarely large and plano-convex in outline, usually with the lowest lobe narrower than the

others, more rarely lobes subequal. *Vexillum* suborbicular, ovate, or obovate, sometimes bilobed, subsessile or clawed, with the claw straight or bent; wings falcate-oblong or oblong, clawed; keel incurved, beaked or obliquely truncate, sometimes plano-convex in outline, clawed, sometimes gibbous. *Stamens* monadelphous, unequal; filaments linear; staminal-tube usually long; anthers unequal, linear and elliptic. *Ovary* sessile or stalked, 2- to many-ovuled, glabrous; style semi-terete, incurved; stigma small, capitate. *Pod* linear or lanceolate, obliquely acute, compressed. *Seeds* not appendaged.

Shrubs or undershrubs, sometimes with single branches from an underground rootstock, glabrous and often glaucous; leaves simple, alternate, more rarely opposite, ovate, lanceolate, more rarely filiform or linear, sometimes large and broadly obovate-elliptic, sometimes perfoliate, with a single main nerve; stipules 0; inflorescence a short terminal or axillary raceme or flowers solitary, rarely flowers massed in a subhead; bracteoles foliaceous or 0.

Endemic; species 32, mostly massed in the south-western districts of the Cape Province, but extend from the Clanwilliam district, through the coastal belt to Natal.

3655 40. EUCHLORA E. & Z. Enum., p. 171 (1836)

Calyx villous; tube campanulate; lobes slightly shorter than the tube, lanceolate, with 2 lobes joined higher up than the others. *Petals* adnate to the calyx-tube; vexillum obovate-spathulate, with a straight broad linear claw; wings obovate, with a linear claw; keel incurved, plano-convex in outline, obtuse, with a long-linear claw. *Stamens* monadelphous; staminal-tube long, adnate to the calyx-tube; filaments linear; anthers unequal. *Ovary* sessile, several-ovuled; style incurved, terete; stigma terminal, minutely capitate. *Pod* ovoid, turgid, 2-valved. *Seeds* without an appendage.

A prostrate villous herb; leaves simple, small, linear, oblong, or lanceolate-elliptic; stipules 0; inflorescence a dense terminal subcapitate raceme.

Endemic; species 1, recorded from Namaqualand, the Ceres, Malmesbury and Cape districts. (Type: *E. serpens* E. & Z.)

3656 41. PHAENOHOFMANNIA O. Kuntze, Rev. Gen., vol. 1, p. 940 (1891) (*Pleiospora* Harv.)

Calyx pilose; tube subinflated; lobes ovate, acuminate, with the 4 upper approximated in pairs and the lowest the narrowest. *Petals* sometimes adnate to the staminal-tube, vexillum elliptic-spathulate or obovate, scarcely clawed; wings obovate, long-clawed; keel straight, elliptic-oblong, obtuse, long-clawed, gibbous. *Stamens* monadelphous, unequal; staminal-tube slit to the base; filaments linear; anthers subequal. *Ovary* shortly stalked, several-ovuled, pubescent or pilose; style suberect, straight in line with the ovary, terete, hairy at the base; stigma suboblique. *Pod* ovate-lanceolate in outline, compressed, 2-valved. *Seeds* without an appendage.

Leafy shrublets silky with tawny hairs; stems often simple from an underground rootstock; leaves digitately 3-foliolate; leaflets lanceolate, elliptic, or obovate, usually mucronate; stipules free, setaceous; inflorescence a capitate spike, terminal or axillary; bracts and bracteoles usually setaceous, more rarely bracts lanceolate.

Endemic; species 9, found in the northern Transvaal, Natal, and the eastern Orange Free State. (Type: *P. cajanifolia* O. K. (Harv.))

3657 42. LOTONONIS E. & Z., Enum. Pl., p. 176 (1835)

Calyx frequently variously hairy, sometimes membranous and somewhat inflated; tube campanulate; lobes usually ovate, often acuminate; the 4 upper united high up and about as long or shorter than the tube; lower lobe narrower than the others, sometimes longer than the tube; more rarely lobes subequal. *Corolla* often hairy; vexillum ovate or obovate, with a short or long oblong or linear claw, sometimes with 2 cushions at the upper end of the claw; wings sometimes shorter than the keel, oblong or plano-convex in outline, with a short or long linear claw, eared at the base, sometimes with transverse ridges; keel usually plano-convex in outline, with a short or long linear claw, eared at the base, usually gibbous. *Stamens* monadelphous, unequal; staminal-tube split to the base, rarely united high up; free portion of filaments linear; anthers usually unequal, more rarely equal, with the lower linear and the upper oblong. *Ovary* sessile, more rarely stalked, linear in outline, rarely obliquely obovate, few- to many-ovuled, usually hairy, sometimes on one suture only, more rarely glabrous; style curved, linear; stigma minutely capitate. *Pod* usually linear in outline, hairy or glabrous. *Seeds* on a long funicle.

Hairy or glabrous plants of various habit, woody or herbaceous, sometimes a prostrate creeper, sometimes forming a cushion, sometimes with a deep tap-root; leaves usually petioled, more rarely sessile, usually digitately 3-foliolate, more rarely 4—5-foliolate, in one species 1-foliolate; leaflets linear, linear-obovate, or obovate, glabrous or variously hairy; stipules minute or foliaceous, solitary or in pairs; flowers axillary or terminal, solitary, more rarely 2—3-nate, often on long peduncles, sometimes massed into a head, more rarely a head-like raceme; bracts and bracteoles usually present.

Species about 110, mostly confined to Africa; a few species recorded from Abyssinia, Morocco, and Arabia; 1 species recorded from Southern Persia and Baluchistan; about 100 species in South Africa, widely distributed.

3657a 43. PEARSONIA Dümmer, Journ. Bot., vol. 50, p. 353 (1912)

Calyx hairy; tube campanulate; lobes shorter than the tube, linear-ovate; the lowest segment narrower than the others; the 4 upper approaching in pairs and more or less connate into 2 bifid lobes. *Vexillum* shortly clawed, straight, oblong or oblong-spathulate or obovate, sometimes hairy; wings obliquely obovate or oblong, not eared, long-clawed, usually with transverse ridges; keel straight, with a relatively small limb, shorter than the wings, long-clawed, usually gibbous. *Stamens* monadelphous, unequal; free portion of filaments linear; anthers unequal. *Ovary* sessile, several- to many-ovuled, villous; style (in flowering stage) straight; stigma terminal. *Pod* much exceeding the calyx, oblong-lanceolate in outline, straight, somewhat compressed, 2-valved, beaked, villous. *Seeds* without an appendage; funicle short.

Herbs, woody at the base, sometimes with simple branches from a woody rootstock, usually hairy; leaves sessile, 3-foliolate; leaflets linear, linear-lanceolate, obovate or obovate-oblong, mucronate or shortly aristate; stipules 0; inflorescence a congested or lax terminal raceme; bracts and bracteoles present.

Endemic; species 12, found in the Transvaal and Natal. (Type: *P. sessilifolia* (Harv.) Dümmer)

3658 44. LISTIA E. Mey., Comm. Pl. Afr. Austr., p. 80 (1835)

Calyx glabrous; tube campanulate; lobes shorter than the tube, with the 4 upper connate in pairs and the lowest free and narrower than the others. *Vexillum* ovate, with a broad linear claw; keel incurved, longer than the

vexillum, elliptic, obtuse, gibbous, with a straight narrow linear claw. *Stamens* monadelphous; staminal-tube split to the base; anthers unequal. *Ovary* sessile, linear in outline, many-ovuled, pubescent on the sutures; style incurved, glabrous; stigma terminal, oblique. *Pod* linear, compressed, repeatedly folded and twisted from side to side. *Seeds* without an appendage; funicle filiform.

A prostrate herb, often with a long deep tap-root; leaves petioled, digitately 3-foliolate; leaflets linear, varying in size on different specimens; stipules usually unequal; inflorescence a terminal raceme; bracts small; bracteoles 0.

Species 1, ranging from the Transvaal, through the north-western districts to South West Africa; also found in Basutoland, in the north-eastern districts, the Orange Free State, and recorded from the Komgha district; also found in Rhodesia. (Type: *L. heterophylla* E. Mey.)

3660 45. LEBECKIA Thunb., Nov. Gen. et Sp., vol. 10, p. 139 (1800)

Calyx glabrous or tomentose; tube usually obliquely campanulate; lobes equal or subequal, usually tooth-like and much shorter than the tube, more rarely ovate and acuminate and almost as long as the tube. *Petals* glabrous, rarely hairy; vexillum suborbicular or ovate or obovate, reflexed, with a broad channelled bent linear claw; wings oblong or obovate, often eared, sometimes with transverse ridges, with a straight linear claw; keel usually obtuse, more rarely acute or subrostrate, usually plano-convex in outline, often gibbous, more rarely saccate, with a straight linear claw. *Stamens* monadelphous; staminal-tube split to the base; anthers unequal. *Ovary* sessile or stalked, usually linear, several- to many-ovuled, glabrous; style incurved; stigma terminal, minutely capitate. *Pod* sometimes membranous, linear, linear-oblong, oblong, rarely lanceolate, compressed or terete, usually tipped with the persistent style, rarely on a long filiform stalk. *Seeds* without an appendage; funicle very short.

Woody shrubs or undershrubs, sometimes subherbaceous, branched or branches simple, sometimes spinescent, glabrous or silky; leaves 3-foliolate or only 1 leaflet developed, usually petioled, more rarely sessile, sometimes very few leaves developed; leaflets often linear or filiform, especially when only 1 developed, more rarely elliptic or obovate; stipules usually 0; flowers small or large, few to many; inflorescence a terminal, often unilateral, raceme; racemes sometimes long and many-flowered, sometimes only 2—3-flowered.

Endemic; species about 46, with a wide range extending from South West Africa and Namaqualand, through Calvinia and Clanwilliam to the south-western districts of the Cape Province and then eastwards through Riversdale, George, Humansdorp, Uitenhage, Port Elizabeth to the Albany district; also recorded from the central districts as Cradock, Middelburg, Williston, Prince Albert, and the north-western districts as Griquatown, Herbert, Kuruman, Upington, Gordinia; 2 species recorded from Natal.

3661 46. WIBORGIA Thunb., Nov. Gen. et Sp., vol. 10, p. 137 (1800)
(*Viborgia* Thunb.)

Calyx sub-2-lipped, glabrous; tube campanulate; lobes shorter than the tube, ovate, acute. *Vexillum* not enveloping the other petals but standing apart from them, reflexed, oblong or ovate, with a linear or linear-spathulate claw; wings usually shorter than the vexillum and keel, oblong, with a long-linear claw; keel incurved, longer than the vexillum, obtuse or rostrate, plano-convex in outline, with a long-linear claw, not gibbous. *Stamens* monadelphous; staminal-tube split to the base; anthers unequal. *Ovary* stalked, elliptic in outline, few-ovuled, glabrous; stigma terminal, minutely

capitate. *Pod* stalked, usually ovate or elliptic in outline, flat, indehiscent winged on the upper suture, sharp and thin along the lower; valves sometimes ridged. *Seeds* without an appendage; funicle filiform.

Rigid, often branched bushes, sometimes spinescent; leaves petioled, digitately 3-foliolate; leaflets linear or linear-oblong or sometimes obovate, sometimes mucronate; stipules small or 0; inflorescence a terminal often unilateral raceme; racemes often densely many-flowered; bracteoles usually very small.

Endemic; species 7, extending from Namaqualand through the south-western districts and then eastwards to the George district. (Type: *W. obcordata* Thunb.)

3662 47. *ASPALATHUS* Linn., Sp. Pl., ed. 1, p. 711 (1753)

Calyx hairy or glabrous; tube campanulate, lobes usually subequal, more rarely the lowest lobe longer than the others, longer or shorter than the tube, ovate-lanceolate, linear-lanceolate, lanceolate, or linear, sometimes pungent, rarely papillose. *Petals* glabrous or hairy; vexillum usually suborbicular and with a short oblong claw; wings shorter or longer than the vexillum or keel, oblong, often with transverse ridges, with a linear claw; keel usually plano-convex in outline, usually gibbous, more rarely saccate, with a linear claw. *Stamens* monadelphous; staminal-tube split to the base; anthers unequal. *Ovary* usually shortly stalked, obliquely ovate or lanceolate, with 2 to several ovules on long funicles, glabrous or hairy; style incurved, linear; stigma terminal, minutely capitate. *Pod* obliquely ovate or lanceolate, acute, turgid or compressed, 1- to several-seeded, sometimes hairy. *Seed* without an appendage; funicle filiform.

Plants of various habit from low bushes to shrubs 6 ft. high, sometimes spiny, glabrous or variously hairy; leaves usually fascicled, 3-foliolate, rarely 1-foliolate; leaflets elliptic, lanceolate, obovate, obovate-lanceolate, linear or needle-like, sometimes small, sometimes pungent, variously hairy, rarely long-ciliate; stipules 0; inflorescence a terminal head or dense raceme, sometimes only 2—3-flowered, sometimes spike-like, more rarely flowers solitary and axillary or terminal; bracts and bracteoles often foliaceous.

Endemic; species about 150, massed in the south-western districts of the Cape Province, but generally widely distributed. (Type: *A. chenopoda* Linn.)

3663 48. *BUCHENROEDERA* E. & Z., Enum., p. 194 (1836)

Calyx hairy; tube campanulate or somewhat urceolate; lobes subequal^b usually very short, sometimes ovate and acuminate, shorter than the tube. *Petals* hairy or glabrous; vexillum suborbicular or ovate, with a broad linear claw; wings oblong, sometimes with transverse ridges, with a long-linear claw; keel plano-convex in outline, shorter than the wings or vexillum, with a long-linear claw, sometimes gibbous. *Stamens* monadelphous; staminal-tube slit to the base; anthers unequal. *Ovary* sessile, usually somewhat ovate in outline, several- to many-ovuled, hairy; style incurved; stigma terminal. *Pod* usually ovate, more rarely linear in outline, obliquely acute, turgid, slightly exceeding the calyx. *Seeds* 1 to few, without an appendage; funicle filiform.

Small bushes, much branched or with simple stems from an underground rootstock, silky pubescent or villous; leaves petioled, digitately 3-foliolate; leaflets linear-lanceolate, or obovate, often hooked at the apex; stipules foliaceous, often longer than the petiole; inflorescence a terminal spike or head, more rarely flowers solitary or 2-nate and axillary or terminal; bracts foliaceous; bracteoles 0.

An African genus of 23 species, one of which found in tropical Africa; the remainder South African and extending from Natal to the Uitenhage district.

3664 49. DICHILUS DC., Mem. Legum., p. 201, t. 35 (1825)

Calyx 2-lipped, glabrous; upper lip 2-toothed or lobed; lower lip 3-toothed or lobed; tube campanulate; lobes of lips shorter than the tube. *Vexillum* suborbicular or ovate, reflexed, with a channelled short-linear claw; wings obliquely oblong, eared, with a broad linear claw; keel longer than the wings and vexillum, obovate, eared, saccate or gibbous, with a linear claw. *Stamens* monadelphous; staminal-tube slit to the base; anthers unequal. *Ovary* sessile, linear, several-ovuled, ciliate on the sutures; style incurved; stigma terminal, minutely capitate. *Pod* linear, slightly compressed between the seeds, ciliate on the sutures. *Seeds* without an appendage; funicle short.

Slender undershrubs, sometimes with simple branches; leaves petioled, digitately 3-foliolate; leaflets linear, oblanceolate or obovate, sometimes mucronate, sometimes pilose; stipules 0; flowers drooping, solitary at the ends of the branches or 2—3 together; bracteoles minute.

Endemic; species 5, found in the Transvaal, Natal, the eastern Orange Free State, and Basutoland; also recorded from the Middelburg, Cradock, and Beaufort West districts. (Type: *D. lebeckioides* DC.)

3665 50. MELOLOBIUM E. & Z., Enum., p. 188 (1836)

Calyx shortly or deeply 2-lipped, glandular or hairy, more rarely glabrous; the upper lip bipartite; the lower lip trifid or 3-toothed; tube campanulate or tubular; lobes ovate or lanceolate, shorter than the tube. *Petals* not much longer than the calyx; vexillum ovate or obovate-spathulate, with a linear channelled claw; keel plano-convex in outline, sometimes gibbous, shorter than the wings and vexillum, with a linear claw; wings oblong, with a linear claw. *Stamens* monadelphous; staminal-tube split to the base; anthers unequal. *Ovary* sessile or shortly stalked, with 1, few, or several ovules, sometimes glandular or hairy; style incurved; stigma terminal, capitate. *Pod* linear or oblong, compressed, often torulose, usually glandular or villous, 2-valved. *Seeds* without an appendage; funicle short.

Shrubs or undershrubs, often spinescent, glandular-villous or viscid; leaves petioled, digitately 3-foliolate; leaflets usually oblong or linear; stipules often foliaceous; inflorescence a short terminal spike or raceme; flowers usually small; bracts and bracteoles often foliaceous.

Endemic; species 31 widely distributed over the Union.

3669 51. CROTALARIA Linn., Sp. Pl., ed. 1, p. 714 (1753)

Calyx usually 2-lipped; tube very often obliquely campanulate; lobes free, subequal, longer or shorter than the tube, or rarely the 2 upper and the 3 lower more or less connate, or the 4 upper connate in pairs and the lowest lobe narrowest, very rarely the upper lobes large and foliaceous. *Petals* usually longer than the calyx, very rarely shorter; vexillum orbicular, obovate, or ovate, mostly cordate and bicallosed at the base within, usually clawed; wings shorter than the keel; keel bent near the base or about midway, ending in a beak. *Stamens* monadelphous; staminal-tube split; anthers unequal. *Ovary* sessile or stalked, 2- to many-ovuled; style knee-bent, often laterally pubescent. *Pod* sessile or stalked, globose or oblong or cylindric in outline, turgid or inflated, 2-valved. *Seeds* without an appendage; funicle filiform.

Herbs, undershrubs, or shrubs, usually erect, sometimes trailing, unarmed, rarely spinescent; leaves usually digitately 3-foliolate, more rarely 1- or 5-foliolate; stipules various, free from the petiole, large or small; inflorescence a raceme, sometimes a head, terminal or opposite the leaves, rarely flowers solitary; flowers large to small; bracts small, rarely foliaceous; bracteoles often small, rarely 0.

Species over 200, but probably not all valid, widely spread in warm and temperate countries; about 30 species in South Africa, widely distributed. (Type: *C. laburnifolia* Linn.)

3673 52. ARGYROLOBIUM E. & Z., Enum., p. 184 (1836)

Calyx 2-lipped, often hairy; tube shortly campanulate; the 2 upper lobes free or connate; the 3 lower lobes connate into a 3-toothed or 3-fid lip. *Vexillum* obovate, with a short oblong or linear claw, sometimes sessile, sometimes with 2 callosities at apex of claw, often hairy; wings oblong or obovate, with a short or long claw, often with transverse ridges; keel slightly incurved, usually plano-convex in outline, sometimes oblong, with a linear claw. *Stamens* monadelphous; staminal-tube closed or split to the base or split above; anthers unequal. *Ovary* usually shortly stalked, many-ovuled, villous; style incurved; stigma terminal, sometimes capitate. *Pod* linear, compressed, usually silky or villous, 2-valved. *Seeds* without an appendage.

Herbs or undershrubs, sometimes dwarf, branched or with simple stems from an underground rootstock, sometimes with tuberous roots, often silky or villous; leaves digitately 3-foliolate; leaflets obovate, lanceolate or linear, sometimes large, often mucronate; inflorescence usually a many-flowered raceme or a subumbel, terminal or opposite the leaves, sometimes flowers solitary or 2-nate; stipules free, usually setaceous, sometimes foliaceous; bracts and bracteoles usually small.

Species about 136 found in Africa, South Europe, western Asia, and east India; 80 species in South Africa, essentially eastern, extending from the Transvaal and Natal, through the coastal belt to the Cape; also recorded from Basutoland, the eastern Orange Free State, and a few central districts. (Type: *A. argenteum* (Jacq.) E. & Z.)

NOTE.—One specimen dissected had diadelphous stamens.—E. P. P.

3683 53. HYPOCALYPTUS Thunb., Prodr. Fl. Cap., vol. 2, p. 124 (1800)
(*Loddigesia* Sims)

Calyx brown, membranous; tube campanulate, intrude at the base; lobes ovate, acute, shorter than the tube. *Vexillum* reflexed, suborbicular or broadly obovate, with a short oblong claw; wing oblong-spathulate, eared at the base, with an oblong claw bent at right angles to the limb; keel incurved, shorter than the *vexillum*, more or less plano-convex in outline, beaked, with a linear claw. *Stamens* monadelphous; staminal-tube closed; anthers unequal. *Ovary* sessile, curved, few to several-ovuled, glabrous; style incurved; stigma terminal, minutely capitate. *Pod* linear, oblong, or lanceolate-oblong, flat, 2-valved, with the upper suture thickened. *Seeds* few or several.

A tall shrub 6—10 ft. high, glabrous; leaves digitately 3-foliolate; leaflets often more or less obcordate, often obovate, with a prominent midrib beneath, usually folded back on the midrib, shortly mucronate; stipules free, small; inflorescence a terminal raceme; the racemes often paniced; bracts and bracteoles setaceous.

Endemic; species 2, extending from the Clanwilliam to the Riversdale, George, Knysna, and Humansdorp districts. (Type: *H. obcordatus* Thunb.)

NOTE.—There are many characters common to the genera *Hypocalyptus* and *Loddigesia*, e.g. a similar calyx deeply intruded at the base; the closed staminal-tube, the thickened upper suture of the pod, the venation and folding of the leaflets on the midrib, but no outstanding difference and in my opinion the genera cannot be separated. *Loddigesia oxalidifolia* Sims should therefore be *Hypocalyptus oxalidifolia* (Sims) Phill.—E. P. P.

3687 54. TRIGONELLA Linn., Sp. Pl., ed. 1, p. 776 (1753)

Calyx-tube campanulate; lobes ovate, acuminate, about as long as the tube. *Petals* free from the staminal-tube, not much exceeding the calyx; *vexillum*

obovate or oblong, sessile or clawed; wings oblong, eared, clawed; keel shorter than the wings, plano-convex in outline, clawed. *Stamens* diadelphous, with the vexillary stamen free or connate with the others to the middle; filaments not widened; anthers uniform. *Ovary* sessile or shortly stalked, few- to many-ovuled; style terete; stigma terminal. *Pod* various, linear or oblong-linear, compressed or terete, acuminate, few- to many-seeded. *Seeds* without an appendage.

Herbs, often strongly scented; leaves pinnately 3-foliolate; stipules adnate to the petiole, sometimes pectinate; inflorescence a head, subumbel or a short and dense raceme or flowers solitary and sessile or peduncled in the leaf-axils; bracts minute or inconspicuous; bracteoles 0.

Species about 70, natives of Europe, Asia, Africa, and Australia; 2 species recorded from South Africa and found in the Vryburg, Barkly West, Wolmaransstad, Bloemfontein and Fauresmith districts, but also recorded from the Cape and the Albany district. (Type: *T. foenum-graecum* Linn.)

3688 55. MEDICAGO Linn., Sp. Pl., ed. 1, p. 778 (1753)

Calyx-tube campanulate; lobes sometimes lanceolate-linear and acuminate and longer than the tube. *Petals* free from the staminal-column; vexillum obovate or oblong, sessile; wings oblong, eared, clawed; keel shorter than the wings, obtuse, with a linear claw. *Stamens* diadelphous, with the vexillary stamen free; filaments not widened; anthers uniform. *Ovary* sessile or subsessile, sometimes twisted, sometimes papillose, many- or several- or rarely 1-ovuled; style subulate or 0; stigma subcapitate, oblique. *Pod* spirally falcate, often covered with spines, often hooked or somewhat curved and unarmed. *Seeds* without an appendage.

Herbs, rarely shrubs; leaves pinnately 3-foliolate; leaflets sometimes obovate and denticulate; stipules adnate to the petiole, sometimes pectinate; inflorescence an axillary raceme or head or flowers subsolitary; flowers often small; bracts small or 0; bracteoles 0.

Species about 140, natives of Europe, Asia, and Africa; many species naturalized in tropical countries; 4 species in South Africa widely distributed. (Type: *M. sativa* Linn.)

3689 56. MELILOTUS Adans., Fam., vol. 2, p. 322 (1763)

Calyx-tube often campanulate; lobes sometimes ovate and shorter than the tube. *Petals* free from the staminal-tube; vexillum obovate or oblong, sessile; wings oblong, eared at the base, clawed; keel more or less plano-convex in outline, obtuse, clawed. *Stamens* diadelphous, with the vexillary stamen free or partly connate with the rest; filaments not expanded; anthers uniform. *Ovary* sessile or subsessile, 2- to few-ovuled; style terete, straight or often incurved; stigma terminal. *Pod* subglobose or ovoid, longer than the calyx, straight, thick, indehiscent or tardily 2-valved. *Seeds* solitary or few without an appendage, often more or less kidney-shaped.

Annual or biennial herbs; leaves pinnately 3-foliolate; leaflets sometimes linear-oblong or elliptic-oblong, sometimes toothed; stipules adnate to the petiole; inflorescence a slender or abbreviated axillary raceme; flowers small; bracts minute or 0; bracteoles 0.

Species about 20, natives of Asia, Europe, and North Africa; 2 species naturalized in South Africa, and several known in cultivation.

3690 57. TRIFOLIUM Linn., Sp. Pl., ed. 1, p. 764 (1753)

Calyx-tube often campanulate; lobes sometimes linear and acuminate and longer than the tube, equal or the lower lobes longer; the 2 upper lobes sometimes more or less connate. *Petals* persistent, all or the 4 lower more or

less adnate to the staminal-tube. *Vexillum* oblong or ovate, sessile; wings oblong, eared, clawed; keel oblong or plano-convex in outline, clawed. *Stamens* diadelphous; the vexillary stamen free or partly connate with the rest; filaments all, or the alternate, sometimes much widened. *Ovary* sessile or subsessile, 2- to few-ovuled, usually glabrous; style straight, incurved above; stigma capitate. *Pod* oblong or ovate in outline, compressed or subterete, indehiscent, enclosed in the calyx. *Seeds* 1—2, more rarely up to 4, without appendages.

Herbs; leaves digitately 3- (rarely 5—7-) foliolate; leaflets often obovate, sometimes denticulate; stipules adnate to the petiole; inflorescence a spike, head, or umbel or rarely flowers solitary; bracts small or absent, sometimes membranous and persistent or deciduous.

Species about 500, found in all temperate and subtropical countries; several (about 7) species recorded from South Africa, though probably not all native; many found in cultivation. (Type: *T. pratense* Linn.)

3698

58. LOTUS Linn., Sp. Pl., ed. 1, p. 773 (1753)

Calyx rarely more or less 2-lipped; tube sometimes campanulate; lobes sometimes ovate and much shorter than the tube, equal or the lower lobes longer than the others. *Petals* free from the staminal-tube, sometimes adnate to the base of the calyx-tube; vexillum obovate, suborbicular or ovate-acuminate, sessile or clawed; wings obovate, sometimes eared and clawed and gibbous; keel incurved or inflexed, beaked, gibbous. *Stamens* diadelphous; the vexillary stamen free; the alternate filaments expanded at the apex; anthers uniform. *Ovary* sessile or subsessile, many-ovuled; style inflexed above the ovary; stigma terminal or lateral, sometimes capitate. *Pod* oblong or often linear in outline, straight or curved, terete, turgid, or rarely plano-compressed, 2-valved, septate within, rarely without septa. *Seeds* subglobose or lenticular, without an appendage.

Herbs or undershrubs; leaves apparently 3-foliolate, but with 1—2 leaflets near the stem and which at first sight resemble stipules; stipules minutely tuberculate or 0; inflorescence an umbel on axillary peduncles, or rarely flowers solitary; bracts 3-foliolate.

Described species about 185, but probably not all valid, natives of Europe, Asia, Africa, America, and Australia; 1 species in South Africa, extending from the eastern Transvaal, through Natal and the eastern coastal districts to the East London district. (Type: *L. corniculatus* Linn.)

3700

59. CYAMOPSIS DC., Mem. Legum., p. 230 (1825)

Calyx sometimes hirsute; tube obliquely campanulate; lobes unequal, linear, with the lower lobes longer. *Petals* all very similar; vexillum obovate or elliptic, sessile; wings oblong or obovate-oblong, sessile; keel erect, sessile, incurved, obtuse. *Stamens* monadelphous; staminal-tube closed; anthers uniform, with the connectives apiculate. *Ovary* sessile, few- to many-ovuled, hairy; style incurved at the apex; stigma capitate. *Pod* linear in outline, sub-4-angled, beaked, 2-valved, septate within, hirsute. *Seeds* without an appendage, quadrate, compressed.

Erect hairy herbs; leaves imparipinnately 3- to many-foliolate (3-foliolate in the South African species); leaflets sometimes linear or obovate and coarsely toothed; stipules small, setaceous; inflorescence an axillary raceme; flowers small; bracteoles 0.

Species 3, natives of India, Arabia, and Africa; 2 species recorded from South Africa, one from Zululand, the other from South West Africa and the Prieska, Hay, and Barkly West districts. (Type: *C. psoraloides* DC.)

3702 60. INDIGOFERA Linn., Sp. Pl., ed. 1, p. 751 (1753)

Calyx hairy or glabrous; tube usually shallowly campanulate, sometimes almost truncate; lobes equal or unequal, longer or shorter than the tube, ovate-linear, ovate, lanceolate, or linear, sometimes acuminate. *Petals* glabrous or hairy; vexillum suborbicular, ovate, obcordate, or obovate, usually sessile; wings obliquely obovate, spathulate, linear, or oblong, usually not with a sharply differentiated claw, often eared, sometimes gibbous; keel usually plano-convex in outline, with a short broad claw, spurred, more rarely saccate. *Stamens* diadelphous; the vexillary stamen free; anthers uniform, apiculate. *Ovary* usually sessile, sometimes subsessile, usually linear in outline, with 1—2 or often many ovules; style usually bent at right angles; stigma capitate. *Pod* usually oblong or linear in outline, sometimes globose, straight, curved, or rarely coiled, septate within, often reflexed, glabrous or hairy.

Plants of various habit, herbs, shrubs, or undershrubs, sometimes with a tap-root, sometimes with simple branches from an underground rootstock, usually hairy; leaves sometimes 1-foliolate, more usually 3-foliolate or imparipinnate, more rarely 3—5—9-foliolate; leaflets ericoid, long-linear, lanceolate or subcordate, sessile or on long petioles; stipules setaceous, lanceolate, ovate, sometimes foliaceous; inflorescence a terminal or axillary raceme or spike, sometimes on a long peduncle; bracts deciduous or persistent; bracteoles 0.

Species over 800 found in all tropical and subtropical countries, especially abundant in Africa; 227 species recorded from South Africa, widely distributed. (Type: *I. tinctoria* Linn.)

3703 61. PSORALEA Linn., Sp. Pl., ed. 1, p. 762 (1753)

(*Hallia* Thunb.)

Calyx usually glandular, rarely not glandular, sometimes 2-lipped, usually glabrous; tube campanulate; lobes often ovate, usually about as long as the tube, rarely shorter, frequently hairy on the inner surface. *Vexillum* ovate, obovate, or orbicular, clawed, often with inflexed sides, rarely with 2 callosities near the base; wings oblong, subfalcate, usually eared, clawed; keel incurved, usually plano-convex in outline, sometimes eared, clawed. *Stamens* diadelphous; vexillary stamen usually free; anthers uniform. *Ovary* sessile or shortly stalked, usually 1-ovuled, very rarely 2—3-ovuled, usually glabrous; style often filiform, usually thickened above; stigma terminal, subcapitate. *Pod* usually ovate in outline, indehiscent, concealed in the calyx. *Seed* without an appendage; funicle very short.

Herbs, shrubs, or undershrubs, rarely prostrate, often aromatic, sometimes hairy, sometimes with large underground stems; leaves gland-dotted, digitately 3- to many-foliolate, pinnate, more rarely 1-foliolate; leaflets often linear, lanceolate or obovate, rarely cordate at the base, sometimes pungent or uncinat; stipules embracing the branches, free or wholly or partly adnate to the petiole; inflorescence a head, spike, or raceme, axillary or terminal, sometimes on long peduncles, rarely flowers fasciated or solitary; bracts 2—3, sometimes ovate and acuminate; bracteoles 0.

Species about 130, natives of Africa, Australia, North and South America, and other temperate and tropical countries; 52 species recorded from South Africa, ranging from the Transvaal and Natal, through the coastal belt to Clanwilliam; also found in Bechuanaland, South West Africa, the north-western districts of the Cape Province, and the Orange Free State. (Type: *P. pinnata* Linn.)

3717 62. SYLITRA E. Mey., Comm. Pl. Afr., p. 114 (1835)

Calyx sub-2-lipped, hairy; tube tubular-campanulate; lobes ovate-lanceolate, shorter than the tube. *Vexillum* obovate-spathulate, not distinctly

clawed; wings adnate to the keel, oblong, eared, with a linear claw; keel shorter than the wings; plano-convex in outline, obtuse, with a long-linear claw. *Stamens* monadelphous; the vexillary stamen free at the base; anthers uniform. *Ovary* sessile, many-ovuled, hairy; style inflexed, terete; stigma terminal capitate. *Pod* oblong, compressed, membranous, sometimes contorted and densely hairy. *Seeds* suborbicular, without an appendage; funicle short, filiform.

Slender undershrubs, sometimes with long tap-roots, finely canescent; leaves usually 1-foliolate, sometimes digitately 3-foliolate; leaflets linear or lanceolate, apiculate; stipules small; flowers small, axillary, usually in pairs; bracts and bracteoles minute or 0.

An African genus of 3 species all found in South Africa and recorded from the north-western districts of the Cape Province, the northern Transvaal, Ngami-land, and South West Africa. (Type: *S. biflora* E. Mey.)

3718 63. TEPHROSIA Pers., Synops., vol. 2, p. 328 (1807)

(*Requienia* DC.)

Calyx sub-2-lipped, hairy; tube campanulate; lobes usually ovate, sometimes acuminate, as long as or longer or shorter than the tube, frequently the 2 upper lobes connate or the lowest longer than the rest. *Vexillum* suborbicular or obovate, usually with a short broad claw, rarely with 2 callosities above the claw, more or less velvety pubescent without; wings obliquely oblong or obovate, slightly adnate to the keel, sometimes eared, clawed; keel incurved, plano-convex in outline, obtuse or somewhat acute. *Stamens* monadelphous or diadelphous; anthers uniform. *Ovary* sessile, usually linear in outline, many-ovuled, rarely 2-ovuled, usually hairy; style incurved or inflexed, often flat and linear, frequently bearded; stigma terminal, capitate. *Pod* linear or rarely ovate in outline, compressed, 2-valved, sometimes septate within, frequently hairy.

Herbs or undershrubs, rarely shrubs, sometimes with tap-roots or with simple branches from a woody rootstock; leaves imparipinnate or digitately 3—5-foliolate or pinnately 3-foliolate, more rarely 1-foliolate; leaflets obovate, lanceolate, linear, or sometimes long linear-lanceolate, usually striate, frequently apiculate, stipellate, hairy or glabrous; stipules usually setaceous, sometimes broad and striate; inflorescence a raceme, terminal or opposite the leaves or axillary, sometimes on long peduncles; bracts subulate, or ovate and spathaceous, bracteoles 0.

Species about 429, found in warm regions, especially in Africa and Australia; about 67 species in South Africa, extending from the Transvaal and Natal, through the eastern districts to the Riversdale district; also found in the Orange Free State and westwards to the north-western districts, Bechuanaland, and South West Africa. (Type: *T. villosa* (L.) Pers.)

3718a 63a. OPHRESTIA Forbes, in Bothalia, vol. 4, p. 1003 (1948)

Calyx sub-2-lipped, hairy; tube campanulate, slightly oblique at the base; lobes ovate to lanceolate, acuminate, with the 2 upper lobes connate to beyond the middle. *Vexillum* oblong, with a channelled claw, with 2 ears at the junction of the claw and limb, pilose without; wings broadly linear, clawed, with an evident ear; keel more or less plano-convex in outline, clawed, eared. *Stamens* monadelphous; anthers uniform. *Ovary* linear, hirsute; style very short, hooked at the apex; stigma capitate. *Pod* oblanceolate, with the valves twisting on dehiscence, hirsute, sometimes becoming glabrous.

Herbs, branching from the base, with the stems ascending or procumbent, slightly flexuous, pubescent; leaves subsessile, 1—5-jugate; leaflets elliptic-oblong, ovate-oblong, or lanceolate oblong, obtuse, acute, or retuse, mucronate, with the

mucro sometimes recurved, nerves 5—7, prominent below, impressed above; stipillae absent; stipules linear to linear-subulate; inflorescence an axillary raceme, peduncled, sometimes much exceeding the leaves.

Endemic; species 4, recorded from the Transvaal, Swaziland, and Natal. (Type: *O. oblongifolia* (E. Mey.) Forbes)

3719 64. MUNDULEA Benth., Miquel. Pl. Jungh., p. 248 (1852)

Calyx sub-2-lipped; tube campanulate; lobes ovate, shorter than the tube, with the 2 upper lobes subconnate. *Vexillum* large, elliptic-obovate, with a short curved oblong claw, with a callus at the base, silky pubescent; wings falcate-oblong, slightly adhering to the keel, eared, clawed; keel somewhat resembling the wings, gibbous, clawed. *Stamens* monadelphous; the vexillary stamen free at the base; anthers uniform. *Ovary* subsessile, linear in outline, many-ovuled, hairy; style incurved; stigma small, capitate. *Pod* linear, flattened, with thickened sutures, hairy. *Seeds* reniform, without an appendage.

Shrubs or small trees, silky pubescent; leaves imparipinnate; leaflets lanceolate or lanceolate-elliptic; stipules small, subulate; inflorescence a terminal or axillary raceme; bracts small; bracteoles 0.

Species 17, found in Madagascar, East India, Ceylon, and Africa; 1 species recorded from South Africa, found in the Transvaal, Swaziland, Natal, Bechuanaland, and South West Africa.

NOTE.—de Candolle in *Prodr.*, vol. 2, p. 249, kept *Mundulea* as a section of the genus *Tephrosia*.—E. P. P.

3720 65. MILLETTIA Wight & Arn., *Prodr. Fl. Pen. Ind. Or.*, vol. 1, p. 263 (1834)

Calyx sometimes sub-2-lipped, sometimes truncate; lobes ovate, about as long as the tube, the 2 upper lobes sometimes subconnate. *Vexillum* large, spreading or reflexed, sometimes suborbicular and with an oblong claw, sometimes with a callus or eared at the base, silky pubescent or glabrous; wings falcate-oblong, free from the keel, often with a broad linear claw and distinctly eared; keel incurved, often plano-convex in outline, obtuse, usually clawed, sometimes eared. *Stamens* monadelphous or diadelphous, sometimes free; anthers uniform. *Ovary* sessile or rarely stalked, often linear in outline, few- to many-ovuled, sometimes hairy; style inflexed; stigma small, subcapitate. *Pod* linear, lanceolate, oblong, or obovate, compressed, rigidly coriaceous or woody, 2-valved, but often tardily dehiscent, glabrous or hairy, sometimes velvety. *Seeds* sometimes solitary, orbicular or reniform, without an appendage.

Trees or shrubs, sometimes scandent; leaves imparipinnate, 2—3- or several-jugate; leaflets oblong, ovate, or oblong-lanceolate, sometimes subacuminate, often distinctly pinnately veined; stipules small, often deciduous; inflorescence a raceme or panicle at the apices of the branches.

Species about 273 found in all tropical and subtropical regions; 2 species recorded from South Africa, extending from Zululand, Natal, and the coastal belt to the Komgha district.

3732 66. BOLUSIA Benth., in Hook. Ic. Pl., t. 1163 (1873)

Calyx-tube shortly campanulate; lobes subequal, ovate-lanceolate, sometimes with the 2 upper and lateral lobes approximate. *Vexillum* broad, sometimes hooded and distinctly keeled, with a short oblong sharply reflexed channelled claw; wings falcate-obovate or obovate, clawed; keel long, linear, spirally contorted, spurred at the base. *Stamens* diadelphous, enclosed and coiled with the keel; anthers unequal. *Ovary* sessile, with

many ovules; style long, enclosed in the spiral keel; stigma terminal. *Pod* oblong, turgid, many-seeded.

Perennial herbs or undershrubs, often with a long tap-root, glabrous or hairy; leaves unifoliate or digitately trifoliate; leaflets linear, elliptic or obovate; stipules ovate or lanceolate, acuminate, sometimes obliquely eared; flowers solitary or 2-nate on peduncles opposite the leaves; bracts and bracteoles present.

An African genus of 4 species; 2 species recorded in South Africa from the Kuruman and Vryburg districts and also from South West Africa. (Type: *B. capensis* Benth.)

3746 67. MICROCHARIS Benth., Trans. Linn. Soc., vol. 25, p. 297, t. 33 (1865)

Calyx-tube campanulate; lobes subequal, ovate-acuminate, as long as the tube. *Vexillum* suborbicular or obovate, sessile or with a narrow claw; wings obliquely obovate-oblong, scarcely adhering to the keel, eared, clawed; keel obtuse or produced into a linear projection, shorter than the wings. *Stamens* diadelphous; anthers uniform. *Ovary* sessile, few- to many-ovuled, attenuated into a short style; stigma capitate, sometimes lateral. *Pod* linear, compressed, membranous, 2-valved, somewhat septate within. *Seeds* transversely oblong or quadrate, without an appendage; funicle very short.

Slender herbs, sometimes hispid; leaves unifoliate, linear-lanceolate, or elliptic; stipules herbaceous or subulate, persistent; inflorescence an axillary usually laxly few-flowered raceme; flowers small; bracts narrow; bracteoles 0.

An African genus of 5 species; 1 species found in the Barberton district of the Transvaal. (Type: *M. tenella* Benth.)

3747 68. SESBANIA Scop., Introd., p. 308 (1777)

Calyx-tube usually widely campanulate, sometimes almost truncate; lobes often subequal, usually subulate-triangular. *Vexillum* orbicular, ovate, obovate, or broadly elliptic, spreading or reflexed, clawed, with 2 free or adnate appendages on the claw, very rarely appendages absent; wings falcate-oblong or linear, clawed, sometimes eared; keel incurved, boat-shaped or plano-convex in outline, obtuse, sometimes acuminate, with a claw slightly longer or shorter than the limb. *Stamens* diadelphous; anthers uniform. *Ovary* sessile or stalked, many-ovuled, sometimes hairy; style incurved; stigma small, capitate. *Pod* linear or rarely oblong, compressed, subterete, 4-angled, or 4-winged, 2-valved or subindehiscent, usually septate within. *Seeds* transversely oblong or subquadrate in outline, without an appendage.

Herbs or shrubs or slender trees; leaves paripinnate, longer or shorter than the inflorescence; leaflets often unequal-sided at the base; stipules foliaceous or subulate, often caducous; inflorescence a raceme or panicle, rarely flowers solitary or in pairs; flowers large or small, coloured, often petals mottled; bracts and bracteoles setaceous, caducous or rarely persistent.

Species about 56, found in all warm parts of the world, mainly in tropical Africa; 6 species in South Africa, recorded from the Transvaal, Natal, Bechuanaland, and South West Africa. (Type: *S. sesban* (L.) Merrill)

3754 69. SUTHERLANDIA R. Br., in Ait. Hort. Kew, ed. 2, vol. 4, p. 327 (1812)

Calyx-tube campanulate; lobes equal or unequal, ovate, shortly pilose or setose within. *Vexillum* shorter than the keel, curved when seen in profile, slightly narrowed to the base, with the margins usually reflexed above;

wings clawed, obtuse or acute, sometimes oblique at the base, eared, with the ear either small or sometimes as long as the claw; keel oblong or oblong-lanceolate in profile, clawed, eared, with the claws connate except at the very base. *Stamens* diadelphous; staminal-tube about 3 times as long as the free portion of the filaments; anthers equal. *Ovary* stalked, many-ovuled, glabrous or more rarely villous; style curved, laterally bearded above; stigma small, capitate. *Pod* membranous, bladdery. *Seeds* black, flattened, with a very evident funicle.

Shrubs up to 6 ft. high, more rarely dwarf; leaves imparipinnate, pubescent to albo-tomentose; leaflets linear to oblong or elliptic-oblong; stipules small, ovate; inflorescence a 2–7-flowered raceme; flowers large and showy.

Endemic; species 6, widely distributed over the Union and South West Africa. (Type: *S. frutescens* (L.) R. Br.)

3756

70. LESSERTIA DC., Astragal., p. 37 (1802)

Calyx-tube campanulate, glabrous or hairy; lobes subequal, ovate, shorter than the tube. *Vexillum* suborbicular or obovate, spreading or reflexed, sometimes with the margins reflexed above, sometimes bilobed, sessile or with a short claw; wings oblong, usually eared, clawed; keel straight or incurved, obtuse, often shorter than the vexillum, clawed. *Stamens* diadelphous; anthers uniform. *Ovary* sessile or stalked, sometimes lanceolate, 2- to many-ovuled, sometimes hairy; style incurved, bearded in front below the apex. *Pod* ovate, oblong, or broadly linear, sometimes falcate, membranous, slightly inflated or compressed, at length opening at the apex. *Seeds* reniform, without an appendage; funicle filiform.

Cano-pubescent herbs or shrubs, more rarely glabrous, often with a deep taproot and sometimes with many simple branches from a woody base, rarely spinescent; leaves imparipinnate; leaflets linear or elliptic, sometimes refuse; stipules small; inflorescence a peduncled axillary raceme, more rarely solitary and terminal, sometimes long and many-flowered, usually longer than the leaves; bracts small; bracteoles minute or 0.

An African genus of between 50 and 60 species; about 35 species in South Africa, widely distributed.

3766

71. ASTRAGALUS Linn., Sp. Pl., ed. 1, p. 755 (1753)

Calyx-tube tubular; lobes subequal, shorter than the tube. *Vexillum* erect, ovate, oblong, obovate, or panduriform, sessile; wings oblong, gibbous, with a linear claw; keel equalling or shorter than the wings, clawed, sometimes with the 2 segments connate. *Stamens* diadelphous; anthers uniform. *Ovary* sessile or stalked, many-ovuled; style terete, straight or incurved, not bearded; stigma small, terminal. *Pod* sessile or stalked, 2-valved, incompletely or completely divided longitudinally into 2 loculi by the inflexion of the carinal suture. *Seeds* often reniform, without an appendage; funicle filiform.

Herbs, undershrubs, or shrubs, unarmed or the petioles hardened and spinescent; leaves imparipinnate, rarely digitately 3-foliolate or 1-foliolate (pinnate in the South African species); stipules free (in the South African species) or adnate to the petiole; inflorescence a raceme, spike, or very rarely an umbel, or flowers solitary; peduncles axillary or from the stem (a lax axillary raceme in the South African species); bracts often small, membranous; bracteoles very small or 0, rarely large and conspicuous.

Described species 1,500, but probably not all of specific rank, chiefly natives of the northern hemisphere, very abundant in temperate Asia; 1 species recorded from the Pretoria, Piet Potgietersrust, and Barberton districts of the Transvaal and also from Natal. (Type: *A. christianus* Linn.)

3792 **72. ORMOCARPUM** Beauv., Fl. d'Oware, vol. 1, p. 95, t. 58 (1804)

Calyx-tube broadly campanulate; lobes ovate, longer than the tube, with the 2 upper lobes connivent or shortly connate and with the lowest rather longer than the rest. *Vexillum* orbicular, with a short oblong curved claw, sometimes with 2 membranous patches at the base; wings obliquely ovate or obovate, clawed; keel broad, incurved, subacute or obtuse, subequalling the wings, clawed. *Stamens* monadelphous; staminal-tube often splitting on both sides so that the stamens appear in 2 bundles of 5 each; anthers uniform. *Ovary* sessile or stalked, many-ovuled, sometimes densely setose; style strongly inflexed, terete; stigma terminal. *Pod* linear, compressed, dividing into 2 or more oblong or elongated indehiscent portions, narrow at each end, often only 1 perfect, rugose or long and densely setose. *Seeds* light brown, compressed, more or less elliptic.

Tall shrubs or small trees, often glutinous; leaves imparipinnate or 1-foliate; leaflets in the South African species many, oblong-elliptic or elliptic; sometimes apiculate; stipules striate; inflorescence a few-flowered axillary raceme or flowers solitary.

Species about 27, found in tropical regions; 1 species recorded from Bechuanaland, the northern Transvaal, Zululand, and Natal. (Type: *O. verrucosum* Beauv.)

3793 **73. AESCHYNOMENE** Linn., Sp. Pl., ed. 1, p. 713 (1753)

Calyx sometimes 2-lipped, with the upper lip entire or 2-fid and the lower lip entire or 3-fid, sometimes subequally lobed and the lobes sometimes ciliate. *Vexillum* orbicular, shortly clawed or sessile, sometimes with 2 pockets at the base; wings obliquely ovate, oblong or obovate, eared, clawed; keel sometimes obovate and slightly incurved, sometimes narrow and strongly incurved or rostrate, more rarely with an elbow-bend and eared. *Stamens* monadelphous; staminal-tube sometimes split on 2 sides so that the stamens appear in 2 bundles of 5 each, very rarely diadelphous; anthers uniform. *Ovary* stalked, 2 to many-ovuled, sometimes papillose with a fine hair from each papilla, sometimes pubescent; style incurved or falcate, beardless, stigma terminal. *Pod* stalked, exceeding the calyx, often divided into 2 to many flat or convex segments; segments smooth or muricate, mostly indehiscent.

Herbs, shrubs, or undershrubs, sometimes with thin stems from a rootstock; leaves subimparipinnate; leaflets few to many, linear, oblong, or elliptic; stipules setaceous or lanceolate; inflorescence an axillary, or rarely terminal, raceme or flowers solitary; flowers large or small; bracts present.

Species about 223, found in tropical regions especially in Africa and South America; 10 species in South Africa (probably not all described) recorded from South West Africa, Ngamiland, the Transvaal, Zululand, Natal, and East Griqualand. (Type: *A. aspera* Linn.)

3796 **74. SMITHIA** Ait., Hort. Kew, vol. 3, p. 496, t. 13 (1789)

Calyx deeply lobed, 2-lipped; upper lip entire or emarginate; lower lip entire, 3-toothed or 3-fid. *Vexillum* suborbicular, obovate, or spatulate, sometimes adnate to the staminal-tube, usually sessile; wings obliquely oblong, oblong-linear, or rarely obovate, with a short broad linear claw; keel incurved or straight, subequalling or shorter than the vexillum, sometimes with a very prominent ear, clawed. *Stamens* monadelphous; staminal-tube slit above and at length on 2 sides; anthers uniform. *Ovary* sessile or stalked, 2- to many-ovuled, usually submoniliform, sometimes with a cupular disc at the base, sometimes hairy; style linear, more rarely filiform and hairy;

stigma small, terminal. *Pod* enclosed in the calyx, dividing into 2 to many segments which at length separate. *Seeds* reniform, without an appendage.

Herbs, shrubs, or undershrubs, sometimes villous; leaves impari- or paripinnate; leaflets oblong or linear, sometimes ciliate; stipules membranous or scarious, persistent; inflorescence often an axillary raceme, usually longer than the leaves, rarely flowers solitary; bracts and bracteoles sometimes scarious, persistent.

Species about 70, natives of Asia and Africa; 5 species recorded from South Africa, found in the Transvaal, Natal, and Griqualand East. (Type: *S. sensitiva* Ait.)

3802 75. STYLOSANTHES Swartz, Prodr. Veg. Ind. Occ., p. 108 (1788)

Flowers unisexual, with occasional bisexual flowers; the fertile flowers often apetalous. *Calyx-tube* filiform; lobes membranous; the 4 upper lobes connate; the lowest lobe narrow, distinct. *Petals* inserted in the throat of the calyx-tube; vexillum orbicular or obovate, sessile; wings oblong or obovate-oblong, shortly clawed; keel incurved, subrostrate. *Stamens* monadelphous, inserted at the apex of the calyx-tube; anthers unequal. *Ovary* subsessile at the base of the calyx-tube, 2—3-ovuled; style long, filiform, after flowering broken at the middle or near the base and the portion that remains becoming curved; stigma minute, terminal. *Pods* sessile, compressed, hooked at the apex with the persistent style base, divided into 1—2 reticulate or muricate segments, sometimes pubescent. *Seeds* compressed, ovate or lenticular, without an appendage.

Perennial herbs or undershrubs, often viscid; leaves pinnately 3-foliolate; pinnae sometimes elliptic and pungent, often prominently veined beneath; inflorescence a dense terminal or axillary spike or head, each in the axil of a leafy bract, or flowers solitary, 2—3-bracteolate, or in pairs with one perfect and the other barren.

Species about 51, found in tropical Asia, Africa, and tropical and subtropical America; 1 species recorded from South West Africa, the Transvaal, and Zululand.

3804 76. ZORNIA J. F. Gmel., Syst., vol. 2, pp. 1076, 1096 (1791)

Calyx membranous; the 2 upper lobes connate; the 2 lateral lobes much smaller; the lower mostly oblong or lanceolate, subequalling the upper lip. *Vexillum* suborbicular, clawed; wings obliquely obovate or oblong, clawed; keel incurved, subrostrate, clawed. *Stamens* monadelphous; anthers unequal. *Ovary* sessile, several- to many-ovuled; style filiform; stigma small, terminal. *Pod* compressed, with the upper suture nearly straight and the lower deeply sinuate, breaking into smooth or spiny indehiscent, sometimes reticulated, segments. *Seeds* subreniform, without an appendage.

Herbs, often with the branches thin and prostrate and arising from a deep tap-root; leaves digitately 2—4-foliolate; leaflets elliptic, lanceolate, or linear, often pellucid-dotted; stipules subfoliaceous, often punctate; flowers solitary or inflorescence an interrupted spike with the peduncles terminal and axillary; bracts conspicuous, enclosing the flowers; bracteoles 0.

Species about 34, found in all warm regions, especially Brazil; 3 species recorded from South West Africa, the Transvaal, Orange Free State, Natal, to the East London and Albany districts; also recorded from the Vryburg district. (Type: *Z. bracteata* J. F. Gmel.)

3807 77. DESMODIUM Desv., Journ. de Bot., vol. 1, p. 122, t. 5 (1813)

Calyx-tube short; lobes longer than the tube; the 2 upper lobes or teeth more or less connate; the 3 lower acute or subulate-acuminate. *Vexillum* oblong,

obovate or orbicular, narrowed at the base or rarely obtuse or subcordate above the claw when present; wings obliquely oblong, more or less united to the keel; keel somewhat straight, incurved or rarely subrostrate, obtuse. *Stamens* monadelphous or diadelphous; anthers uniform. *Ovary* sessile or stalked, 2- to many-ovuled, sometimes hairy; style inflexed or incurved, beardless; stigma terminal. *Pod* exserted from the calyx, sessile or stalked, compressed, divided into membranous or coriaceous flat or rarely turgid glabrous or villous segments which separate at maturity. *Seeds* compressed, orbicular-reniform, without an appendage.

Herbs, shrubs, or undershrubs, rarely small trees or subscandent; leaves usually pinnately 3-foliolate, more rarely digitately 3-foliolate, very rarely 5-foliolate or 1-foliolate; leaflets elliptic, lanceolate, ovate, or obovate; stipules often striate, dry, free or in 1 species opposite the leaves and joined; inflorescence a terminal, rarely subaxillary, simple raceme or panicle, or rarely a shortly peduncled axillary raceme or flowers clustered or solitary; bracts persistent or deciduous; bracteoles sometimes conspicuous and persistent, sometimes minute or 0.

Species about 438, found in all tropical and subtropical countries; 9 species in South Africa, extending from the Transvaal and Natal to the Komgha district. (Type: *D. scorpiurus* (Sw.) Desv.)

3808 78. PSEUDARTHRIA Wight & Arn., Prodr. Fl. Pen. Ind. Or., vol. 1, p. 209 (1834)
(*Anarthrosyne* E. Mey.)

Calyx-tube campanulate; lobes ovate, acuminate, the 2 upper lobes connate. *Vexillum* suborbicular or obovate, sometimes wedge-shaped at the base; wings oblong, free from the keel, eared and shortly clawed; keel oblong, obtuse, eared, clawed. *Stamens* diadelphous; anthers uniform. *Ovary* subsessile or distinctly stalked, many-ovuled, usually hairy; style subulate, inflexed; stigma terminal. *Pod* compressed, with the sutures straight or scarcely sinuate between the seeds, imperfectly articulated, sometimes pubescent. *Seeds* compressed, subreniform, without an appendage.

Herbs or undershrubs, tomentose-villous or viscid-pubescent; leaves pinnately 3-foliolate; leaflets sometimes elliptic; stipules free; inflorescence a raceme, with the racemes usually panicked; bracts narrow.

Species about 13, natives of Asia, India, and Africa; 2 species found in the Transvaal, Swaziland, Natal, and southwards to the Kentani district.

3810 79. ALYSICARPUS Neck., Elem., vol. 3, p. 15 (1790)

Calyx rigidly glumaceous; tube shortly campanulate; lobes lanceolate or ovate-lanceolate, longer than the tube, often ciliate, with the 2 upper lobes often connate almost to the apex. *Vexillum* obovate or orbicular, sessile or narrowed into a claw; wings obliquely oblong, adnate to the keel; keel slightly incurved, obtuse; with a membranous appendage on one or both sides. *Stamens* diadelphous. *Ovary* sessile or shortly stalked, few- to many-ovuled, sometimes glandular-pubescent; style filiform, incurved at the apex; stigma terminal, capitate. *Pod* subterete or somewhat compressed, constricted between the seeds into segments; segments often equal-sided, convex or turgid, sometimes hairy. *Seeds* suborbicular or globose, without an appendage.

Diffuse or erect glabrous or silky pilose herbs or woody, sometimes glandular-pubescent; leaves 1-foliolate, very rarely 3-foliolate, lanceolate, linear-lanceolate or elliptic; stipules scarious, often deciduous; inflorescence a raceme; flowers pedicellate, in pairs.

Species about, 18 found in Africa and Asia; 3 species in South Africa, extending from the Transvaal, Swaziland, and Natal to the Komgha district. (Type: *A. bupleurifolius* (L.) DC.)

3821

80. *DALBERGIA* Linn. f., Suppl., p. 52 (1781)

Calyx-tube campanulate; lobes unequal, often with the 2 upper lobes broader and the lowest longer and narrower. *Vexillum* ovate, orbicular, or obovate, clawed; wings oblong, shortly clawed; keel often oblong, obtuse, shortly clawed, often eared. *Stamens* monadelphous or diadelphous or in 2 bundles owing to the staminal-tube splitting on both sides; the vexillary stamen sometimes absent; anthers uniform, small, erect, didymous, opening at the apex, rarely splitting longitudinally. *Ovary* stalked, 1- to few-ovuled, sometimes hairy; style short, incurved; stigma small, terminal. *Pod* oblong or strap-shaped, usually thin and flat, 1—4-seeded, indehiscent, not thickened or winged at the sutures. *Seed* flattish, subreniform.

Trees or high climbing shrubs, sometimes villous; leaves imparipinnate, few to many-jugate, very rarely 1-foliolate; leaflets small to large, oblong, broadly elliptic or obovate; inflorescence an axillary or terminal dichotomous cyme or an irregular subcymose panicle; flowers small, often numerous; bracts small, broad, subsistent; bracteoles often minute.

Species about 315, found in all tropical countries; 4 species recorded from South Africa and found in Bechuanaland, the Transvaal, Zululand, Natal, Pondoland, to the Komgha district. (Type: *D. lanceolaria* Linn. f.)

3828

81. *PTEROCARPUS* Linn., Sp. Pl., ed. 2, p. 1662 (1763)

Calyx somewhat leathery; tube campanulate; lobes ovate, shorter than the tube, with the 2 upper lobes more or less connate, with a broad linear claw; wings obliquely ovate or oblong, eared, with a linear claw; petals of keel subsimilar to the wings, sometimes unequal at the base, eared, clawed. *Stamens* monadelphous or the staminal-tube split on both sides forming 2 bundles, more rarely stamens diadelphous; anthers equal. *Ovary* sessile or stalked, 2—6-ovuled, sometimes hairy; style terete, shortly incurved or almost straight; stigma small. *Pod* compressed, indehiscent, orbicular or ovate, more rarely oblong, more or less oblique at the base, more or less thickened or hardened in the middle, with a membranous wing or sharp ridge, sometimes almost completely coriaceous or membranous, with the style lateral or rarely terminal, glabrous or densely setose at the middle. *Seeds* 1—3, separated by hard partitions.

Unarmed trees; leaves imparipinnate; leaflets few to many, often elliptic or suborbicular, sometimes acuminate, with the veins often distinct; inflorescence a lax axillary and terminal raceme or panicle; flowers often large; bracts and bracteoles small, caducous.

Species about 100, found in all tropical regions; 3 species in South Africa, recorded from the Bechuanaland Protectorate, Natal, and the Transvaal. (Type: *P. draco* Linn.)

3834

82. *LONCHOCARPUS* H. B. & K., Nov. Gen. et Sp., vol. 6, p. 383 (1823)

Calyx sometimes villous; tube campanulate, sometimes subtruncate or the lobes ovate, shorter than the tube and with the 2 upper lobes connate. *Vexillum* orbicular, ovate, or obovate, rarely oblong, frequently with a wedge-shaped claw, sometimes with 2 appendages above the claw, often silky; wings obliquely oblong or falcate, clawed, eared, slightly adnate to the keel above the claw; keel suberect or curved, obtuse, eared, clawed, sometimes gibbous. *Stamens* monadelphous, with the vexillary stamen free at the base; anthers uniform. *Ovary* more or less stalked, 2- to many-ovuled, frequently hairy; style incurved, terete; stigma terminal, small, capitate. *Pod* oblong or elongated, flat, membranous or leathery, indehiscent, with

the style scar terminal; sutures not winged, but the upper sometimes laterally dilated, sometimes villous. *Seeds* 1—2, rarely many, compressed, reniform or suborbicular.

Trees or tall climbing shrubs; leaves imparipinnate, rarely pinnately 3-foliolate; leaflets large, elliptic, ovate, usually with distinct venation; inflorescence a simple, rarely paniced, raceme, or flowers sometimes fascicled or 2-nate; bracts small, caducous; bracteoles caducous or subsistent.

Species about 193, natives of tropical America, Africa, and Australia; 2 species recorded from South West Africa, the Bechuanaland Protectorate, Natal, and the Transvaal. (Type: *L. sericeus* (Poir.) DC.)

3856 **83. ABRUS** Adans., Fam., vol. 2, p. 327 (1763)

Calyx truncate, with very short teeth; the 2 upper teeth subconnate. *Vexillum* ovate, more or less adnate to the staminal-tube below; wings oblong-linear or falcate-oblong, with a long-linear claw; keel arcuate, longer and broader than the wings, sometimes gibbous, long-clawed. *Stamens* 9, monadelphous; the vexillary stamen absent; anthers uniform. *Ovary* subsessile, few- to many-ovuled; style short, incurved, beardless; stigma capitate. *Pod* membranous or woody, oblong or linear, compressed, 2-valved, subseptate between the seeds, glabrous or sometimes rugose and hairy. *Seeds* subglobose or oblong in outline, shining, sometimes red, with a black base.

Shrubs or undershrubs, often twining; leaves abruptly pinnate with the common petiole ending in a bristle; leaflets many-jugate, often small, oblong or oblong-elliptic; stipules setaceous; inflorescence an axillary raceme or racemose on short leafless branches.

Species 6, natives of all tropical countries; 2 species in South Africa extending from the north-eastern Transvaal, Natal, the Transkei to the Komgha district.

3861 **84. DUMASIA** DC., Ann. Sc. Nat., vol. 4, p. 96 (1825)

Calyx-tube cylindric or tubular-campanulate, gibbous at the base on the upper side, with the mouth obliquely truncate. *Vexillum* obovate, erect, spurred or shortly eared on both sides at the base of the limb, with a deeply channelled claw; wings falcate-obovate or oblong, with a very long linear claw; keel somewhat adnate to the wings, slightly incurved, more or less oblong, with a very long linear claw. *Stamens* diadelphous; anthers uniform. *Ovary* subsessile, few- to many-ovuled, sometimes villous; style straight, dilated about the middle or higher up and incurved above the dilated portion, beardless; stigma terminal. *Pod* subsessile, linear, compressed, falcate, torulose. *Seed* subglobose, without an appendage.

Twining herbs; leaves pinnately 3-foliolate; leaflets ovate; stipules setaceous; inflorescence an axillary raceme or flowers solitary or clustered on the rhachis; bracts small, narrow; bracteoles minute.

Species about 10, natives of Asia and tropical Africa; 1 species in South Africa, extending from the Transvaal and Natal, through the coastal area to the Knysna district.

3864 **85. GLYCINE** Linn., Sp. Pl., ed. 1, p. 753 (1753)

Calyx sometimes hairy; tube campanulate; lobes often ovate, subacuminate and about as long as the tube; the 2 upper lobes more or less connate. *Vexillum* suborbicular or obovate, sessile or shortly clawed, sometimes subauricled at the base; wings narrow, slightly adnate to the keel, eared, clawed; keel obtuse, broader than the wings, clawed, sometimes gibbous. *Stamens* monadelphous or more rarely more or less diadelphous; anthers uniform. *Ovary* subsessile, few- to many-ovuled, sometimes densely villous; style

terete, slightly incurved, often short, beardless; stigma terminal, capitate. *Pod* linear, sometimes falcate, often reflexed, compressed or at length subterete, 2-valved, septate between the seeds, sometimes hirsute. *Seeds* without an appendage.

Prostrate or twining herbs, rarely suberect, sometimes with a deep tap-root; leaves pinnately 3- (rarely 5—7-) foliolate; stipellae absent; stipules small; inflorescence a raceme; flowers small, solitary or clustered on the axis, sometimes distant; bracts small, setaceous; bracteoles narrow and sometimes very small.

Species about 31, found in all tropical and subtropical countries; 1 species in South Africa, recorded from the Transvaal and Natal. (Type: *G. javanica* Linn.)

3865 **86. NEORAUTANENIA** Schinz, in Bull. Herb. Boiss., vol. 7
p. 35 (1899)

Calyx hairy, sub-2-lobed; tube campanulate; lobes ovate-lanceolate, much or slightly longer than the tube; 2 upper lobes united higher up than the rest; lowest lobe sometimes 2-lobed. *Vexillum* reflexed, obovate, eared at the base, with a broad linear, often channelled, claw; wings oblong, slightly adnate to the keel, eared, clawed; keel plano-convex in outline, with a long-linear claw, sometimes eared. *Stamens* diadelphous or monadelphous; anthers equal. *Ovary* sessile, linear, with few to several ovules, hairy; style somewhat linear, curved with a boss or other thickening at the base; stigma terminal, capitate. *Pod* oblong, septate between the seeds, sometimes densely tomentose. *Seeds* dark brown, elliptic in outline, with a white hilum.

Erect or prostrate herbs, with subsimple stems, sometimes with a large tuber up to 60 cm. in diameter; leaves pinnately 3-foliolate; leaflets elliptic, lanceolate, or obovate, sometimes lobed, often apiculate, hairy; stipules lanceolate; inflorescence a few- to many-flowered raceme; bracts and bracteoles 0.

An African genus of 8 species; 7 species described from the Union and recorded from South West Africa, Ngamiland, the Vryburg district, Natal, the Transvaal, and the Orange Free State. (Type: *N. amboensis* Schinz)

3866 **87. TERAMNUS** P. Br., Hist. Jamaica, p. 290 (1756)

Calyx sometimes densely hirsute; tube tubular-campanulate; lobes ovate, acuminate, with the 2 upper lobes joined higher up. *Vexillum* obovate or obovate-spathulate, narrowed at the base, not distinctly clawed, without appendages; wings oblong, with a broad linear claw, adnate to the keel; keel almost straight, shorter than the wings, broadly elliptic, with a broad linear claw. *Stamens* monadelphous; alternate anthers small, abortive. *Ovary* sessile, many-ovuled, sometimes hairy; style short, thick, beardless; stigma capitate. *Pod* linear, 2-valved, septate between the seeds, tipped with the persistent and hooked style. *Seed* light brown, oblong in outline, almost as thick as long.

Twining herbs; leaves pinnately 3-foliolate; leaflets sometimes lanceolate; stipules small; inflorescence an axillary raceme or flowers fascicled in the leaf-axils; flowers small; bracts small; bracteoles linear or lanceolate.

Species 12, found in all tropical regions; 1 species recorded from the Transvaal, Natal, through the coastal belt to the Komgha district.

3870 **88. ERYTHRINA** Linn., Sp. Pl., ed. 1, p. 706 (1753)

Calyx tubular to campanulate, 2-lipped or subtruncate, frequently obscurely 5-lobed, sometimes with the tube cleft nearly to the base, sometimes densely woolly-villous to puberulous. *Vexillum* ovate, obovate, elliptic, oblong-obovate, or elliptic-oblong, obtuse or often emarginate, with a short claw, sometimes minutely velvety; wings longer or shorter than the keel, ovate or

oblong to obovate, frequently curved, shortly clawed, sometimes eared at the base; keel ovate, obovate, or oblong, more rarely acuminate or truncate and mucronate, sometimes eared. *Stamens* diadelphous, but the vexillary stamen united to the staminal-tube for varying lengths; anthers uniform. *Ovary* stalked, linear, many-ovuled, usually densely tomentose; style terete; incurved, sometimes hispid below; stigma small, terminal. *Pod* stalked, usually falcate, compressed or subterete, constricted between the seeds, rarely armed with prickles. *Seeds* red, elliptic in outline.

Shrubs or large trees, rarely with subterranean and corky stems; branches usually armed with prickles, sometimes tomentose; leaves pinnately 3-foliolate, sometimes in clusters at the ends of the stems; leaflets ovate, obovate, elliptic or elliptic-ovate, usually acuminate, with a pair of glands at the base, with the petiole and petiolules often armed; stipules ovate, oblong, or linear, frequently hairy; inflorescence usually a terminal raceme, more rarely lateral, usually many-flowered; flowers usually large and showy, appearing before or with the leaves; bracts ovate, oblong, or linear-obovate, usually hairy, deciduous.

Species 174, found in tropical and subtropical countries; 6 species occur in South Africa and extend from the Transvaal, Natal, the eastern Orange Free State, Basutoland, through the eastern districts to the Uitenhage and Humansdorp districts.* (Type: *E. corallodendron* Linn.)

3877

89. MUCUNA Adans., Fam., vol. 2, p. 325 (1763)

Calyx often hairy; tube campanulate; lobes ovate, with the 2 upper lobes connate and the lowest longer than the 2 lateral. *Vexillum* sessile, ovate-elliptic, folded together, about as long as the wings, eared at the base with the ears often upturned; wings oblong or ovate, incurved, sessile, eared, often adhering to the keel; keel sessile, more or less linear-oblong, incurved at the apex or rostrate, equalling or longer than the wings, eared. *Stamens* diadelphous; alternate filaments sometimes swollen at the apex; anthers unequal. *Ovary* sessile, few-ovuled, surrounded by a cupular disc at the base, villous; style linear or filiform, often hairy, beardless; stigma small, terminal. *Pod* thick, ovate, oblong, or linear in outline, 2-valved, septate between the seeds, often covered with stinging hairs. *Seeds* round or transversely oblong in outline.

Herbs or tall climbing shrubs; leaves pinnately 3-foliolate; leaflets often obliquely ovate, apiculate; stipules deciduous; inflorescence an axillary raceme; flowers large; bracts small, sometimes caducous.

Species about 145, found in all warm countries; 1 species recorded from the Transvaal. (Type: *M. urens* (Linn.) DC.)

3882

90. GALACTIA P. Br., Hist. Jamaica, p. 298 (1756)

Calyx often hairy; tube campanulate; lobes lanceolate-linear, acuminate, longer than the tube, usually the 2 upper completely fused, rarely 2-toothed or 2-lobed; lateral lobes often smaller and the lowermost often longest. *Vexillum* ovate, obovate, or orbicular, with the margins scarcely inflexed at the base, shortly clawed; wings narrow, oblong or obovate, eared, shortly clawed, adnate to the keel; keel obliquely oblong, subequalling or exceeding the wings, shortly clawed. *Stamens* diadelphous or the vexillary stamen connate with the others at the middle; anthers uniform. *Ovary* sessile, several- to many-ovuled, often villous; style linear, beardless; stigma small. *Pod* linear, straight or incurved, compressed or very rarely convex on both sides, 2-valved. *Seeds* without an appendage.

Prostrate or climbing herbs or erect shrubs, sometimes villous; leaves pinnately 3-foliolate (in the South African species), rarely 1—5- or 7-foliolate; stipules small, often deciduous; inflorescence an axillary raceme, with the flowers

fasciated on the peduncle or the lower subsolitary; bracts small, setaceous; bracteoles very small.

Species about 136, found in all warm regions; 1 species recorded from the Transvaal and Natal.

3891 91. CANAVALIA DC., Mem. Legum., p. 375 (1825)

Calyx 2-lipped; the upper lip large, truncate or 2-lobed; lower lip smaller, subentire or 3-fid; tube campanulate. *Vexillum* large, suborbicular, reflexed, eared at the base, clawed with 2 callosities or ridges above the claw; wings often oblong-obovate, falcate or subtwisted, eared, with a callosity on the ear, clawed; keel wider than the wings, incurved, obtuse or obtusely beaked, with the beak usually inflexed or spiral, sometimes eared, gibbous, clawed. *Stamens* monadelphous or imperfectly diadelphous; anthers uniform. *Ovary* subsessile, many-ovuled, often surrounded at the base by a cupular disc, sometimes hairy; style incurved or folded with the keel, beardless; stigma terminal, sometimes subcapitate. *Pod* oblong or broadly linear in outline, compressed or turgid, 2-valved, often with 2 ridges on the suture, sometimes velvety. *Seeds* black, white, or reddish, often elliptic in outline.

Twining or prostrate herbs; leaves pinnately 3-foliolate; leaflets sometimes large, elliptic or orbicular, sometimes subacuminate; stipules small, wart-shaped or inconspicuous; inflorescence an axillary raceme; flowers often large, usually clustered along the peduncle.

Species about 50, found in all warm regions; 2 species recorded from the Transvaal, Natal to the Komgha district. (Type: *C. rosea* (Sw.) DC. = *C. obtusifolia* auct. plur., an (Lam.) DC.?)

3893 92. FAGELIA Neck., Elem., vol. 3, p. 41 (1790)

Calyx hairy with bulbous-based hairs; tube campanulate; lobes much longer than the tube, lanceolate, acuminate, with the 2 upper lobes slightly connate. *Vexillum* obovate, reflexed, eared at the base, with a broad wedge-shaped claw; wings shorter than the keel, oblong-elliptic, eared, with a narrow-linear claw; keel obliquely obovate, incurved, obtuse, not eared, gibbous, with a narrow-linear claw. *Stamens* diadelphous; anthers uniform. *Ovary* sessile, several-ovuled, villous; style filiform and hairy in the lower portion, somewhat thickened and glabrous in the upper portion; stigma terminal, capitate. *Pod* obliquely oblong in outline, turgid, 2-valved, hairy. *Seeds* black, globose.

A twining herb, subwoody at the base, sticky, scented; leaves pinnately 3-foliolate; leaflets ovate, often obliquely ovate; stipules ovate, striate; inflorescence an axillary raceme; flowers large, with the uppermost portion of the keel dark-coloured; bracts ovate, caducous; bracteoles 0.

Endemic; species 1, confined to the south-western districts of the Cape Province. (Type: *F. bituminosa* (L.) DC.)

3897 93. RHYNCHOSIA Lour., Fl. Cochinch., p. 400 (1790)

Calyx usually variously hairy, longer or shorter than the petals; tube campanulate, short, sometimes strongly nerved; lobes usually lanceolate, linear or ovate, often long-acuminate, usually longer than the tube; 2 upper lobes connate into a boat-shaped structure or connate higher up than the others. *Vexillum* obovate, suborbicular, usually eared at the base, with a deeply channelled short claw; wings oblong or oblong-linear, usually shorter than the keel, eared, with a straight or curved linear claw; keel more or less plano-convex or oblong in outline, usually gibbous, sometimes saccate, clawed. *Stamens* diadelphous, with the vexillary filament often kneed; anthers uniform, without an apical apiculus. *Ovary* subsessile, linear, lanceolate or

ovate in outline, frequently surrounded at the base by a small or evident cupular disc, variously hairy, sometimes glandular, with usually 2, more rarely 1, ovules; style linear, subterete, or filiform, usually hairy on the lower portion, frequently curved and thickened in the upper portion; stigma terminal, capitate. *Seeds* black or brown, more rarely dark blue.

Herbs or undershrubs, twining, prostrate, or rarely erect, sometimes with a thick woody rootstock; leaves usually pinnately 3-foliolate, more rarely digitately 3-foliolate, or unifoliolate, or pinnate or bipinnate; leaflets various, often with resinous dots; stipules ovate or lanceolate; inflorescence a raceme or axillary umbel or flowers in dense oblong subsessile clusters or solitary; bracts caducous; bracteoles 0.

Species over 300, found in all warm regions; about 80 species described from South Africa, widely distributed. (Type: *R. volubilis* Lour.)

3898 94. ERIOSEMA Desv., Ann. Sc. Nat., vol. 9, p. 421 (1826)

Calyx oblique at the base, hairy; tube campanulate; lobes ovate or lanceolate, often long-acuminate, longer or shorter than the tube, all distinct or the 2 upper rarely shortly connate, sometimes the lowest lobes longer than the others. *Vexillum* obovate or oblong, with a deeply channelled claw, usually eared with the ears sometimes strongly inflexed, usually with a distinct ridge above the claw or with 2 callosities, usually villous and glandular; wings usually shorter than the keel and partially adnate to it, oblong or obovate, usually eared, with a linear claw; keel slightly incurved at the apex, more or less plano-convex in outline, often gibbous, more rarely saccate, with a linear claw, often glandular. *Stamens* diadelphous, with the vexillary stamen curved or kneed. *Ovary* sessile, usually surrounded by a small cupular disc, usually 2-ovuled, long-villous, often glandular; style usually slightly thickened above; stigma capitate. *Fruit* compressed, obliquely orbicular or rhomboid or broadly oblong in outline, 2-valved, usually villous. *Seeds* 2, rarely 1, compressed, obliquely transverse; funicle attached at one end of the hilum.

Herbs or undershrubs, erect, prostrate, or rarely twining; leaves pinnately 3-foliolate, very rarely 1-foliolate; leaflets elliptic, orbicular, ovate, elliptic-lanceolate, linear, or linear-lanceolate, sometimes cordate at the base, often prominently veined beneath, usually resin-dotted, often hairy; stipules lanceolate, free or rarely connate, often striate; inflorescence an axillary raceme, with the flowers solitary or fascicled on the rhachis, rarely the flowers axillary and subsolitary; flowers usually reflexed.

Species over 100, natives of tropical Africa, America, Australia, and southern Asia; 10 species in South Africa extending from South West Africa, the Transvaal, Natal, Basutoland, and through the eastern districts to the Humansdorp and Knysna districts.

NOTE.—The South African species of *Rhynchosia* and *Eriosema* are very similar. The difference between the 2 genera is based on the method of attachment of the funicle to the hilum. In the South African species of *Eriosema* I find the calyx oblique at the base and the vexillum invariably with callosities or ridges above the claw; these characters were not seen in the South African species of *Rhynchosia*.—E. P. P.

3899 95. FLEMINGIA Roxb. ex Ait., Hort. Kew, ed. 2, vol. 4, p. 349 (1812)

Calyx hairy, glandular; tube campanulate; lobes often linear-acuminate, longer than the tube, subequal or the lowest lobe longer than the others. *Vexillum* elliptic, obovate, or orbicular, with inflexed ears at the base and a linear channelled claw; wings obliquely obovate or oblong, often adhering to the keel, eared, with a long linear claw; keel somewhat straight or curved, more or less plano-convex in outline, obtuse or acute, sometimes gibbous and with a long-linear claw. *Stamens* diadelphous, with the vexillary filament often kneed or broadened; anthers uniform. *Ovary* subsessile, invariably

2-ovuled, sometimes surrounded at the base by a short cupular disc, often hairy; style often somewhat thickened above; stigma terminal, subcapitate. *Pod* short, oblique, turgid, 2-valved, sometimes densely glandular. *Seeds* somewhat thick, without an appendage, with a thick funicle attached to the whole length of the hilum.

Herbs, undershrubs, or shrubs, erect, prostrate, or rarely twining; leaves digitately 3-foliolate or more rarely 1-foliolate; stipules striate, often caducous; inflorescence a dense spike, raceme, or panicle; bracts broadly foliaceous, concave, usually persistent, exceeding the flowers, sometimes narrow; bracteoles 0.

Species about 37, found in all tropical countries; 2 species recorded from the Transvaal and Natal.

3901 96. PHASEOLUS Linn., Sp. Pl., ed. 1, p. 723 (1753)

Calyx with the 2 upper teeth or lobes free or connate. *Vexillum* orbicular, recurved spreading or subtwisted, with the margins at the base inflexed and subappendaged; wings obovate or rarely oblong, equalling or exceeding the vexillum, adhering to the keel above the claw, often twisted; keel linear or obovate, with a long obtuse spirally twisted beak. *Stamens* diadelphous; the vexillary filament often thickened or kneed above the base; anthers uniform. *Ovary* subsessile, with several to many ovules; style within the beak of the keel and twisted with it, thickened, very often longitudinally bearded above, stigma oblique or lateral. *Pod* linear or falcate, subterete or compressed, 2-valved. *Seed* thickened, without an appendage.

Herbs, rarely woody at the base, twining, prostrate, or shortly erect; leaves pinnately 3-foliolate, very rarely 1-foliolate; stipules striate, persistent; inflorescence a raceme, with the flowers clustered on the peduncle; bracts similar to the stipules or small, often caducous; bracteoles often broad, sometimes long persistent.

Species about 269, found in all warm regions; 2 species recorded from South West Africa and Natal. (Type: *P. vulgaris* Linn.)

3905 97. VIGNA Savi, Osserv. Phas., vol. 3, p. 7 (1824)

Calyx sometimes setose; tube campanulate; lobes lanceolate, about as long as the tube or shorter, sometimes with the 2 upper teeth or lobes connate. *Vexillum* orbicular or broadly obovate, with inflexed auricles at the base, sometimes with 2 appendages near the base of the limb, with a short deeply channelled claw; wings falcate-obovate or obovate, usually a little shorter than the vexillum, eared, rarely gibbous, with a linear claw; keel subequalling the wings, either incurved or with an obliquely incurved beak but not forming a complete spiral, usually plano-convex or sometimes convex-concave in outline, usually gibbous, rarely saccate, with a linear claw. *Stamens* diadelphous or monadelphous; filaments often dilated above; anthers uniform. *Ovary* sessile, several- to many-ovuled, frequently surrounded by a cupular disc, usually villous; style linear, often thickened above, bearded on the inner side; stigma very oblique or on the inner side of the style. *Pod* linear in outline or subterete, usually straight, 2-valved, often hairy. *Seeds* reniform or subquadrate in outline, without an appendage.

Herbs, twining or prostrate, rarely shortly erect, more rarely subwoody, frequently with a deep woody rootstock; leaves pinnately 3-foliolate, rarely 1-foliolate; stipules sessile; inflorescence a raceme with the flowers fascicled on the peduncle or the flowers solitary or 2-nate; flowers frequently large; peduncles often villous; bracts and bracteoles caducous or persistent.

Species about 184, found in all tropical regions, 21 species described from South Africa, extending from the Transvaal, Zululand, Natal, the eastern Orange Free State, through the eastern districts to the Uitenhage, Humansdorp, and Knysna districts; a few species recorded from the central districts. (Type: *V. glabra* Savi)

3907 98. *SPHENOSTYLIS* E. Mey., Comment. Pl. Afr. Austr., p. 148 (1835)

Calyx glabrous; tube campanulate; lobes ovate, obtuse, shorter than the tube. *Vexillum* suborbicular, with 2 inflexed auricles, with the margins sometimes reflexed; subsessile or with a short deeply channelled claw; wings obliquely obovate, eared, with a linear claw; claw sometimes short; keel incurved more or less concave-convex, obtuse, sometimes gibbous, subsessile or with a short linear claw. *Stamens* diadelphous, with the vexillary stamen sometimes adnate with the others at the base; filaments not expanded above. *Ovary* sessile, linear in outline, many-ovuled, surrounded by a cupular disc at the base, pubescent or glabrous; style linear, scarcely thickened above, sometimes articulated on the ovary, not bearded; stigma flat, oblique, ciliated on the margins. *Pod* linear in outline, 2-valved, septate between the seeds; valves convex. *Seeds* black, oblong in outline, thick, minutely papillose, without an appendage.

Low shrubs, sometimes with the herbaceous branches from a large underground rootstock; leaves pinnately 3-foliolate; leaflets elliptic, lanceolate, linear, or ovate-lanceolate, sometimes acuminate; stipules small, striate; inflorescence a few-flowered raceme congested at the end of a long peduncle; flowers large; bracts small or 0; bracteoles 2.

An African genus of 16 species; 3 species in South Africa recorded from the Transvaal, Swaziland, Zululand, Natal, and Ngamiland. (Type: *S. marginata* E. Mey.)

3910 99. *DOLICHOS* Linn., Sp. Pl., ed. 1, p. 725 (1753)

Calyx 2-lipped; lower lip 3-lobed; upper lip either completely fused or sometimes 2-toothed, sometimes truncate; tube campanulate; lobes ovate, obtuse, more rarely linear and acuminate, usually shorter than the tube. *Vexillum* usually strongly reflexed, orbicular or obovate, usually with inflexed auricles at the base, invariably with variously shaped appendages on the limb, subsessile or with a short deeply channelled claw; wings adhering to the keel, and sometimes longer than the keel, falcate, obovate or oblong, often eared, sometimes gibbous, with a linear claw; keel usually strongly incurved, often beaked, not spiral, often plano-convex in outline, sometimes gibbous, clawed or subsessile, often minutely ciliate. *Stamens* diadelphous; vexillary filaments sometimes adhering with the others, usually thickened, broadened, or appendiculate near the base; anthers uniform. *Ovary* sessile or subsessile, usually linear in outline, 2- to many-ovuled, surrounded at the base by a small or large cupular disc; style usually thickened above, sometimes thickened just above the ovary, often bearded above, sometimes penicillate, rarely almost glabrous; stigma terminal, often subcapitate. *Pod* usually linear, often falcate, compressed, 2-valved, with the sutures often thickened; valves flat or convex. *Seeds* thick or compressed, rarely with an appendage.

Herbs or undershrubs, twining, prostrate, or shortly erect, sometimes branches from an underground woody rootstock, sometimes with a long woody tap-root; leaves pinnately 3-foliolate, rarely digitately 3-foliolate; leaflets ovate, elliptic, or linear, sometimes hastate or 3-lobed, sometimes acuminate; stipules small; inflorescence an axillary raceme or flowers axillary, solitary or fascicled; bracts and bracteoles striate, often small and caducous.

Species about 206, natives of the warm parts of Africa, Asia, and Australia; a few in South America; 29 in South Africa, extending from the Transvaal, Natal, Basutoland through the eastern districts to the south-western districts of the Cape Province; also recorded from Queenstown, Barkly West, and South West Africa. (Type: *D. biflorus* Linn.)

3910a 100. ALISTILUS N. E. Br., Kew Bull., p. 294 (1921)

Calyx hairy, sub-2-lipped; upper lip entire; lower lip 3-lobed; tube campanulate; lobes shorter than the tube, ovate, obtuse. *Vexillum* sessile, orbicular, very shortly bilobed at the apex, with inflexed auricles and 2 appendages on the limb; wings oblong, eared, with a broad linear claw; keel incurved, subsessile, obliquely ovate, obtuse. *Stamens* diadelphous, with the vexillary stamen adnate to the others at the middle and kneed at the base; anthers uniform. *Ovary* linear, with few ovules, hairy; style broadening from the base upwards, with narrow membranous margins; stigma lateral, truncate. *Pod* linear, compressed, somewhat falcate.

A procumbent herb, not twining; leaves pinnately 3-foliolate, on long petioles; leaflets ovate, densely ciliate, the uppermost usually 3-lobed; stipules lanceolate; inflorescence a raceme; bracts and bracteoles 0.

Endemic; species 1, recorded from Bechuanaland and the Transvaal. (Type: *A. bechuanicus* N. E. Br.)

86. GERANIACEAE

Flowers bisexual, regular or more rarely irregular. *Sepals* 5, rarely 4, free or rarely connate to the middle, imbricate, rarely valvate, rarely the uppermost spurred. *Petals* 5, rarely 4 or 2, very rarely 0 by abortion, mostly equal, hypogynous or subperigynous, imbricate or rarely contorted. *Disc* frequently present. *Stamens* twice as many as the sepals, more rarely 3 times as many, sometimes by abortion reduced to 2—9 or 7, all fertile or some without anthers; filaments free or more or less connate at the base, sometimes connate in 5 bundles of 3 each; anthers versatile, 2-theous, opening by longitudinal slits. *Ovary* superior, 3—5-lobed, rarely 2-lobed, 3—5-chambered, with 1—2 pendulous ovules in each chamber, beaked; styles adhering to the beak; stigmas ligulate, filiform, or clavate, rarely capitate. *Fruit* 3—5- (rarely 8-) lobed, breaking away from the beak into 1-seeded parts (mericarps), rarely 2- to many-seeded, usually with the persistent styles as long tails. *Seed* pendulous, embryo curved and folded, with leafy cotyledons; endosperm rarely present.

Herbs, shrubs or undershrubs, rarely trees; leaves opposite or alternate, toothed, lobed, dissected, or compound, rarely entire; stipules rarely absent; flowers on 1—2-flowered axillary peduncles or in many-flowered umbels, rarely solitary and axillary; bracts present or 0.

Genera 11, species over 800, natives of temperate and subtropical regions.

1. Flowers irregular; stamens 10, usually only 2—7 bearing anthers

4. *Pelargonium* L'Hér.

Flowers regular; stamens 10—15, all perfect or the alternate without anthers 2

2. Stamens 10 1. *Geranium* Linn.

Stamens 15 3

3. Stems thick and succulent, covered with the persistent spine-like petioles 3. *Sarcocaulon* Sweet

Stems not or very rarely succulent, not covered with spines

2. *Monsonia* Linn.

3924 1. GERANIUM Linn., Sp. Pl., ed. 1, p. 676 (1753)

Calyx usually hairy, often with stalked glandular hairs, sometimes strigose. *Sepals* 5, imbricate, usually elliptic, lanceolate, or ovate, usually with a long

or short apiculus, frequently prominently 3-nerved, sometimes more than 3-nerved, with membranous margins. *Petals* 5, sessile, hypogynous, imbricate, usually obovate, frequently notched at the apex, usually with a few hairs at the base. *Disc* of 5 glands, alternating with the petals. *Stamens* 10, usually of 2 different lengths, all perfect or very rarely 5 without anthers, free or shortly connate at the base; filaments linear from a broadened base. *Ovary* 5-lobed, 5-chambered, beaked, with 2 ovules in each chamber, usually with a gland at the base of each ovary-lobe, usually villous; styles adhering to the beak, glabrous or hairy; stigmas 5, often recurving. *Mericarps* distinct, 1-seeded, separating at maturity from the persistent enlarged beak, with the tails arched, generally glabrous. *Seeds* often oblong in outline, sometimes with 2 depressions; testa with lace-like markings; endosperm thin or 0; embryo curved and folded, with leafy cotyledons.

Herbs, rarely undershrubs, very rarely shrubs, sometimes tufted; branches often jointed; leaves opposite or alternate, petioled, palmately lobed or dissected, with the segments sometimes linear, sometimes entire or cut, rarely toothed; stipules present, sometimes large; flowers 1—2-nate on axillary peduncles, rarely with the peduncle aborted.

Species close on 500, mostly massed in temperate regions; 18 species in South Africa extending from the Transvaal, Natal, and Basutoland through the coastal belt to the Cape. (Type: *G. sylvaticum* Linn.)

3925 2. MONSONIA Linn., Mant., vol. 1, p. 14 (1767)

Flowers regular. *Sepals* often villous, lanceolate, tailed at the apex, 3- or more-nerved, with membranous edges. *Petals* 5, sessile, hypogynous, imbricate, usually truncate and shallowly lobed at the apex. *Stamens* 15, all fertile, connate at the base and separated into 5 bundles and with each bundle consisting of 1 long and 2 short stamens whose filaments are adnate for $\frac{1}{2}$ their length; filaments linear from a broadened base, ciliate. *Ovary* 5-lobed, 5-chambered, beaked, with 2 ovules in each chamber, with a gland at the base of each lobe, villous; styles adhering to the beak, usually hairy; stigmas 5, usually clavate. *Mericarps* 1-seeded, separating at maturity from the beak, with the styles sometimes much elongated, hollow at the apex, tapering to the base and ending in a short spine, hirsute. *Seed* linear-oblong, keeled, without endosperm.

Herbs or undershrubs, rarely subsucculent, often with simple stems from a woody rootstock or from a deep tap-root, erect or decumbent, rarely acaulescent; leaves opposite or alternate, linear, lanceolate, ovate-lanceolate, or elliptic, rarely cordate at the base, crenate-toothed, more rarely dissected; stipules setose, rarely subspinescent; flowers solitary or 2 or few in a peduncled umbel, medium sized, more rarely large and showy.

Species about 40, natives of Africa, western Asia, and eastern India; 29 species in South Africa, widely distributed. (Type: *M. speciosa* Linn.)

3926 3. SARCOCAULON Sweet, Hort. Brit., ed. 1, p. 73 (1826)

Flowers regular. *Sepals* 5, imbricate, lanceolate, rarely long-tailed at the apex, nerved with distinct but not prominent nerves, sometimes with distinct membranous edges, hairy or glabrous. *Petals* sessile, obovate, subtruncate, hairy at the base. *Disc* sometimes present, then of 5 glands alternating with the petals. *Stamens* 15, all perfect, in 5 groups of 3 each; each group consisting of 2 short and 1 long stamen; filaments narrowing from the base upwards, usually ciliate. *Ovary* 5-lobed, 5-chambered, beaked, with 2 ovules in each chamber, villous; styles adhering to the beak; stigmas 5, thick, linear. *Mericarps* 1-seeded, broad and somewhat rugose above, tapering

into a long hirsute foot which ends in a small spine; tails often hairy below and feathery above. *Seed* oblong, without endosperm.

Fleshy or succulent undershrubs, usually covered with a waxy epidermis, armed with the persistent spiny petioles which are usually shield-shaped at the base; leaves petioled, tufted or solitary in the axils of the spines, cuneate or kidney-shaped, simple, entire or shortly lobed, rarely dissected; flowers solitary, peduncled.

An African genus of 12 species, 11 of which occur in South Africa and found in the central, western, and north-western districts of the Cape Province; also recorded from Namaqualand and South West Africa, the Fish River valley and near Middledrift in the King Williamstown district. (Type: *S. burmannii* (DC.) Sweet)

3928

4. PELARGONIUM L'Hér., Geran., t. 7 (1787—88)

Flowers irregular. *Sepals* 5, imbricate, connate at the base, usually oblong or lanceolate, sometimes shortly apiculate, often with membranous margins, variously hairy or glabrous; the uppermost sepal produced at the base into a slender nectariferous tube which is decurrent along the pedicel and adnate to it. *Petals* 5, rarely 2—4 by abortion, often variously marked, usually unequal, imbricate, clawed or sessile, sometimes lacerated. *Disc* 0. *Stamens* 10, connate at the base, with 2—7 filaments bearing anthers and the rest without anthers or rudimentary; filaments linear. *Ovary* 5-lobed, 5-chambered, beaked, with 2 ovules in each chamber, hirsute; styles adhering to the beak, usually hairy; stigmas 5, usually filiform. *Mericarps* 1-seeded, tapering from the apex to the base, frequently ending in a spine, hirsute, tailed with the persistent styles which are usually feathery. *Seed* linear-oblong, keeled, with 2 grooves.

Herbs, shrubs or undershrubs, more rarely annuals, often acaulescent, rarely forming cushions, sometimes with thick and subsucculent stems, often with underground tubers; variously hairy, often viscid and aromatic; leaves very variable, opposite or rarely alternate, lobed or pinnatifidly lobed or incised or pinnatifid or bipinnatifid, sometimes entire and lobed, crenate, or toothed on the margins, sometimes cordate, more rarely peltate, often fleshy, usually petioled, rarely deciduous leaving a bare fleshy stem; petioles rarely transformed into spines; stipules various, sometimes setaceous, sometimes large and membranous, rarely forming spines; inflorescence a 2- to many-flowered umbel, rarely flowers solitary; flowers large or small.

Species over 230, mostly South African and widely distributed; a few are found in tropical Africa, Australia, and Syria. Many horticultural hybrids are cultivated.

87. OXALIDACEAE

Flowers bisexual, regular, more rarely of 2 kinds (perfect, and minute and apetalus). *Sepals* 5, free, imbricate or rarely valvate. *Petals* 5, clawed, free or united at the base, imbricate or valvate, often contorted. *Disc* 0. *Stamens* 10, of unequal lengths, rarely 15, all bearing anthers; filaments slightly connate at the base; anthers 2-theous, opening inwards. *Ovary* superior, 5-lobed, 5-chambered, with 1 to many ovules in each chamber on axile placentas; styles 5, free, very rarely style 1; stigmas terminal, capitate, penicillate. *Fruit* a capsule or berry, 5-lobed. *Seeds* 1 to many; embryo straight; endosperm fleshy.

Stemless or caulescent herbs, often with tuberous roots or tubers, very rarely shrubs, undershrubs, or trees; leaves alternate, simple or compound; stipules present or absent; inflorescence an umbel, raceme, or a paniced cyme, or flowers solitary.

Genera 7, with close on 900 species, natives of Africa, Madagascar, North and South America, Asia, and the Malay Archipelago.

3936

OXALIS Linn., Sp. Pl., ed. 1, p. 433 (1753)

Flowers regular. *Sepals* 5, imbricate, free or united at the base. *Petals* 5, hypogynous, convolute, with the claws connate into a tube. *Stamens* 10 in 2 series; the outer series smaller and opposite the sepals; the inner series larger and opposite the petals. *Ovary* 5-lobed, 5-chambered, with 1 to many ovules in each chamber; styles 5, distinct; stigmas terminal, capitate or penicillate. *Capsule* deeply 5-lobed, loculicidally dehiscent, 1- to several-seeded in each loculus. *Seeds* with a crustaceous testa; endosperm fleshy.

Herbs, sometimes acaulescent, often with corms, rhizomes, or fleshy tap-roots, sometimes caulescent, annual or perennial, rarely undershrubs; leaves basal or cauline, alternate, digitately 3- to many-foliolate or pinnately 3-foliolate, rarely 1-foliolate; leaflets entire or orbiculate-bilobed; stipules present or absent; peduncles usually axillary; inflorescence a 1- to several-flowered cymose- or pseudo-umbel.

Species about 500, mostly confined to South Africa; also found in extra-tropical and tropical South America and in Mexico. (Type: *O. acetosella* Linn.)

88. LINACEAE

Flowers regular, bisexual. *Calyx* 4—5-partite or sepals free, imbricate, persistent. *Petals* fugacious, contorted, equalling the number of sepals, free, tapering to the base, often clawed, with the claw naked or crested. *Stamens* as many as the petals and alternating with them, sometimes alternating with small staminodes; filaments connate at the base; anthers 2-theous, opening inwards. *Ovary* superior, 3—5-chambered, with 2 axile ovules in each chamber; style 3—5, free, rarely more or less connate; stigmas subcapitate. *Fruit* a globose septicidal capsule, incompletely 5—10-locular. *Seeds* compressed; embryo straight, with flat cotyledons; endosperm copious, scanty, or 0.

Fleshy or perennial herbs or undershrubs; leaves simple, entire, alternate or opposite, rarely whorled; stipules present or absent, sometimes gland-like or interpetiolar; inflorescence a panicle or cyme.

Genera 10, with about 120 species, widely dispersed, but mainly in the temperate regions.

3945

LINUM Linn., Sp. Pl., ed. 1, p. 277 (1753)

Sepals 5, lanceolate, often with small gland-tipped teeth. *Petals* 5, sessile, obovate, sometimes slightly connate at the base. *Stamens* 5, hypogynous, perfect; filaments linear, connate at the base into a cup- or basin-shaped tube, sometimes with small teeth on the rim of the tube. *Hypogynous glands* small, adnate to the outside of the staminal-tube and opposite the petals. *Ovary* 5-chambered, glabrous; styles 5, free, linear, or rarely more or less united; stigmas capitate. *Fruit* 5-valved, 5-locular, sometimes spuriously 10-locular, with 1 seed in each loculus. *Seed* with a straight embryo and scanty endosperm.

Herbs or undershrubs, glabrous or rarely pubescent; leaves alternate, rarely opposite or in whorls of 4, linear, lanceolate, or elliptic-ovate, entire; stipules 0 or gland-like; inflorescence a terminal or axillary raceme, sometimes a subcorymbose raceme or spicate head, or flowers in contracted fascicles; bracts present with a dark gland on either side at the base.

Species about 232 widely dispersed in temperate and subtropical regions; 5 species in South Africa, extending from the Transvaal, Natal, and Basutoland, through the coastal belt to the Clanwilliam district; also recorded from a few inland districts. (Type: *L. usitatissimum* Linn.)

89. ERYTHROXYLACEAE

Flowers bisexual, rarely unisexual, hypogynous, regular. *Sepals* 5, rarely 6, free or more or less connate, persistent. *Petals* as many as the sepals, free, imbricate, deciduous, usually with a transverse bifid scale at the base of the limb, rarely nude but, if so, then the texture of the claw different to that of the limb. *Stamens* twice as many as the petals; filaments connate at the base; anthers 2-theous, opening lengthwise. *Ovary* superior, 2—5-chambered, with 1—2 ovules in each chamber, sometimes all the chambers but one suppressed; styles 3—5, free or more or less connate; stigmas oblique, depressed-capitate or clavate. *Fruit* a drupe. *Seed* with fleshy endosperm, rarely endosperm 0; embryo straight.

Trees, shrubs, or undershrubs; leaves usually alternate, more rarely opposite, simple, entire, rarely slightly crenate; stipules intrapetiolar, rarely extrapetiolar, persistent or caducous; flowers solitary or fascicled or inflorescence a panicle of cymes; bracts present or 0.

Genera about 5; species about 120, mostly African, rare in South America.

3956 ERYTHROXYLUM P. Br., Hist. Jamaica, p. 278 (1756)

(*Nectaropetalum* Engl., *Peglera* Bolus)

Sepals 5, rarely 6, usually slightly connate at the base. *Petals* as many as the sepals, free, usually with an erect transverse 2-fid appendage on the inner face, more rarely with a transverse pocket or with the appendage absent. *Stamens* 10, rarely 12, connate at the base into a saucer-shaped or cup-shaped structure; filaments of equal or unequal length, inserted in one or two rows. *Ovary* superior, 1—3-chambered, rarely 4-chambered, with 1, or rarely 2, ovules in each chamber, sometimes at the time of flowering all the chambers but one suppressed; styles simple or 3 and free, or connate at the base or for $\frac{1}{2}$ their length, more rarely styles 2 and free or rarely styles 4; stigmas subclavate, subglobose, or discoid, flat and recurved in the simple-styled species. *Fruit* a small 1-seeded drupe. *Seed* with a straight embryo; endosperm copious, scanty, or 0.

Shrubs or trees; leaves alternate, membranous or coriaceous, entire; stipules deciduous or caducous, more rarely persistent, sometimes the branchlets leafless and the stipules crowded towards the extremities and leaving conspicuous scars; flowers small, pedicelled, solitary or fascicled.

Species about 306, natives of tropical and subtropical regions; 5 species in South Africa, occurring in the Transvaal, Zululand, and Natal, and extending to the East London district.

90. ZYGOPHYLLACEAE

Flowers bisexual, rarely unisexual, regular or irregular. *Sepals* 5, rarely 4, free or connate at the base, persistent or deciduous, imbricate, rarely valvate. *Petals* 4—5, rarely 0, free, imbricate or contorted, rarely valvate. *Disc* mostly present, variously shaped. *Stamens* as many or twice as many, rarely 3 times as many, as the petals, often unequal in length; filaments free, often with scales or appendages at the base; anthers 2-theous, opening inwards. *Ovary* superior, sessile or rarely shortly stalked, furrowed, angled or winged, usually 4—5- (rarely 2—13-) chambered, with 2 to many pendulous ovules in each chamber; style simple, more rarely styles free; stigma simple, very rarely discoid. *Fruit* usually a capsule, sometimes breaking up into cocci, rarely a drupe, glabrous or densely covered with long hairs, sometimes

tuberculate or spinescent. *Seed* very often pendulous and solitary; embryo straight or curved; endosperm present or absent.

Herbs, shrubs, or undershrubs, rarely trees; leaves often fleshy, usually opposite, very rarely alternate or subopposite, 2-foliolate, rarely 1-foliolate, more rarely 3-foliolate or pinnate; leaflets entire; stipules persistent, sometimes spinescent; flowers usually peduncled, solitary, 2-nate, rarely inflorescence a cyme; bracts present or absent.

Genera 28, species about 200, found principally in the tropics and warm regions of both hemispheres.

1. Spiny shrubs or trees; leaves alternate, 2-foliolate; fruit a drupe
 8. *Balanites* Delile
 Herbs, shrubs, or undershrubs, sometimes spiny; leaves opposite, simple,
 2—3- or many-foliolate, if subopposite or fascicled then ovary hairy
 and fruits covered with long hairs; fruit a capsule or breaking up into
 cocci 2
2. Ovary hairy; fruits densely covered with long hairs 3
 Ovary glabrous, rarely hairy, but if so then leaves pinnate and fruits
 spinose or tuberculate 4
3. Leaves imparipinnate; fascicled at the nodes 5. *Neoluderitzia* Schinz
 Leaves simple, subopposite or stems sometimes almost leafless
 6. *Sisyndite* E. Mey.
4. Styles free; petals 0 2. *Seetzenia* R. Br.
 Styles simple; petals present... .. 5
5. Stamens with appendages 6
 Stamens without appendages 7
6. Petals 3-fid; disc with 10 long filiform processes
 4. *Augea* Thunb.
 Petals simple; disc without processes 3. *Zygophyllum* Linn.
7. Leaves usually 3-foliolate, rarely 1- or 2-foliolate, equal
 1. *Fagonia* Linn.
 Leaves abruptly pinnate; one leaf usually longer than the other
 7. *Tribulus* Linn.

3963 1. FAGONIA Linn., Sp. Pl., ed. 1, p. 386 (1753)

Sepals 5, membranous, imbricate, ovate, deciduous. *Petals* 5, longer than the sepals, clawed, imbricate, caducous. *Disc* inconspicuous. *Stamens* 10, inserted on the disc; filaments filiform, nude; anthers oblong. *Ovary* sessile, 5-angled, 5-chambered, with 2 pendulous ovules from basal ascending funicles, hairy; style simple, subulate, 5-angled; stigma simple. *Fruit* breaking up into 5 1-seeded cocci. *Seed* erect, compressed, broadly oblong, mucilaginous; cotyledons broad, flat; endosperm horny.

Diffuse or prostrate branching herbs, woody at the base, pubescent, hispid, or glabrous; leaves opposite, usually 3-foliolate, rarely 1- or 2-foliolate; leaflets linear, entire, mucronate; stipules often spinescent; flowers peduncled, solitary.

Species about 35, natives of the Mediterranean region, western Asia, eastern India, Africa, and South America; 1 species in South Africa, recorded from South West Africa and the Prieska district. (Type: *F. cretica* Linn.)

3964 2. SEETZENIA R. Br., Observ. Pl. Denham & Clapperton Trav., App. 231 (1826)

Sepals 5, somewhat fleshy, valvate, with a horseshoe-shaped ridge on the inner face and with deflexed glandular hairs from the upper portion of the

ridge. *Petals* 0. *Disc* inconspicuous. *Stamens* normally 5, sometimes 7—8, inserted on the disc; filaments thick, somewhat angled, glabrous, naked; anthers oblong, with the thecae slightly separated. *Ovary* sessile, oblong-clavate, 5-angled, 5-chambered, with a single pendulous ovule in each chamber; styles 5, rarely 6—7, free, spreading; stigmas capitate. *Fruit* a capsule, breaking up into 5 cocci separating from a 5-angled axis. *Seeds* compressed; cotyledons thick; endosperm scanty.

Glabrous undershrubs, with jointed somewhat glandular branches and woolly at the nodes; leaves opposite, petioled, trifoliate; leaflets flat, apiculate, somewhat glandular, with the terminal leaflet obovate and larger; stipules intrapetiolar; flowers solitary, pedicelled.

Species 2; one in North Africa and India; the other in South Africa and recorded from the Clanwilliam and Van Rhynsdorp districts. (Type: *S. africana* R. Br.)

3965 3. ZYGOPHYLLUM Linn., Sp. Pl., ed. 1, p. 385 (1753)

Sepals 4—5, often subfleshy, sometimes connate at the very base, very rarely the outer two gibbous at the base, persistent or deciduous, imbricate. *Petals* 4—5, rarely shorter than the sepals, usually obovate, generally sessile, more rarely clawed, imbricate. *Disc* somewhat fleshy, 8—10-angled. *Stamens* 8—10, inserted at the base of the disc; filaments terete, with an entire bifid or 2-partite appendage; appendage usually fimbriate or pectinate; anthers oblong. *Ovary* sessile on the disc, often 4—5-angled or globose, 4—5- (rarely 2—3-) chambered, with 2 to many ovules in each chamber; style terete, simple, longer or shorter than the ovary; stigma minute. *Fruit* a 4—5-angled or -winged capsule; 5—6-locular, with few or several seeds. *Seeds* crustaceous; embryo with oblong cotyledons; endosperm scanty.

Small shrubs, or undershrubs, often spiny, branches sometimes jointed, sometimes papillose; leaves opposite, 2-foliate, very rarely 1-foliate, often fleshy, sometimes soon deciduous; leaflets suborbicular, spatulate, elliptic, linear, lanceolate or lanceolate-elliptic, sometimes very small; stipules membranous, spiny, or herbaceous; flowers solitary or 2-nate.

Species about 118, mostly African and Australian; 49 species in South Africa, mostly in the Karoo, also found in South West Africa, the Transvaal, with a few species in the Cape Province. (Type: *Z. fabago* Linn.)

3967 4. AUGEA Thunb., Prodr. Pl. Cap., p. 80 (1794)

Calyx-tube obconic, 2-winged at the base; lobes 5, ovate-lanceolate, shorter than the tube, with an apical membranous appendage and membranous margins. *Petals* 5, linear, 3-fid, with the middle lobe much shorter. *Disc* cup-shaped, with 10 filiform processes on the rim and longer than the tube. *Stamens* 10, inserted on the margin of the disc and alternating with the processes; filaments terete, with a deeply 2-partite appendage; lobes of appendage irregularly toothed; anthers oblong, obtusely mucronate at the apex. *Ovary* within the disc, sessile, 10-chambered, with 2—3 ovules in each chamber; style short; stigma subcapitate. *Capsule* oblong in outline, irregularly septicidal. *Seeds* obovate in outline, somewhat flattened, with a densely woolly testa; cotyledons thick, flat; endosperm 0.

An annual glabrous fleshy herb; stem simple or divided at the base, with jointed terete branches; leaves opposite, simple, connate, subterete, obtuse or subacute; flowers few, shortly pedicelled at the nodes of the branches.

Endemic; species 1, found in the central districts and north-western districts of the Cape Province; also in South West Africa. (Type: *A. capensis* Thunb.)

3975 5. *NEOLUDERITZIA* Schinz, Bull. Herb. Boiss., vol. 2, p. 190 (1894)

Calyx tomentose; tube shallowly campanulate; lobes 5, longer than the tube, ovate-lanceolate. *Petals* 5, reflexed, slightly longer than the sepals, wedge-shaped and densely villous at the base. *Stamens* 10; filaments terete, alternating with the petals with a more or less oblong and villous appendage at the base to which they slightly adhere; anthers oblong. *Disc* hyaline, urceolate, completely enclosing the ovary. *Ovary* deeply 5-lobed, 5-chambered, with a single ovule in each chamber, densely villous; style simple, stout, 5-angled; stigma simple. *Fruit* a capsule, densely villous, breaking up into 5 cocci. *Seeds* without endosperm.

A branched shrub, with spines at the nodes; leaves imparipinnate, 4—5-jugate, fascicled at the nodes; leaflets oblong, obovate, or oblong-obovate; flowers peduncled and solitary between the fascicle of leaves.

Endemic; species 1, found in South West Africa. (Type: *N. sericeocarpa* Schinz)

3976 6. *SISYNDITE* E. Mey. ex Sonder in Harv. & Sond. Fl. Cap., vol. 1, p. 354 (1860)

Sepals somewhat leathery, ovate-lanceolate, with membranous and woolly margins. *Petals* 5, sessile, obovate, a little longer than the sepals. *Disc* 5-lobed; each segment more or less quadrate and roughly and unequally lobed. *Stamens* 10; filaments terete, narrowing above; anthers linear, versatile, almost as long as the filaments. *Ovary* sessile, 5-angled, 5-chambered, with a solitary pendulous ovule in each chamber, densely villous; style stout, terete; stigma simple. *Fruit* a capsule somewhat crustaceous, 5-lobed, transversely furrowed, densely villous with long yellowish hairs, at length separating into 5 obliquely ovate cocci. *Seeds* compressed; cotyledons thick, elliptic; endosperm 0.

An undershrub with the habit of *Cadaba juncea*, glabrous and glaucous; leaves approaching in pairs, not truly opposite, simple, obovate or oblong, often soon deciduous leaving the stems bare; stipules 0.

Endemic; species 1, found in South West Africa. (Type: *S. spartea* E. Mey.)

3978 7. *TRIBULUS* Linn., Sp. Pl., ed. 1, p. 386 (1753)

Sepals 5, deciduous or semi-persistent. *Petals* 5, spreading, shorter to longer than the sepals, deciduous. *Stamens* 10, those opposite the petals somewhat longer than those alternating with the petals; filaments subulate, those opposite the sepals with both an extra- and intra-staminal basal gland; anthers cordate or oblong-cordate. *Intrastaminal glands* free or connate to form a shallow cup at the base of the ovary. *Ovary* sessile, 5-lobed, 5-chambered, with 3—5 ovules in each chamber; covered with erect bristle-like hairs; style short or absent; stigma conspicuous, 5-angled, pyramidal or hemispheric, formed by the ingrowth of the 5 stigmatic lobes. *Fruit* 5-angled, at length breaking up into 5 indehiscent cocci; cocci dorsally tuberculated, unarmed, spinous, winged, or winged and tuberculate, 1—5-seeded. *Seeds* without endosperm.

Annual or perennial herbs, more rarely perennial shrubs; branches prostrate or ascending, more rarely erect; leaves opposite, one usually larger than the other, more rarely alternate, abruptly pinnate; leaflets opposite, entire, somewhat oblique; stipules present; flowers axillary, solitary, usually yellow.

Species about 54, found in all warm countries; 5 species recorded from South Africa, widely distributed. (Type: *T. terrestris* Linn.)

3980 8. *BALANITES* Delile, Fl. d'Egypte, p. 221, t. 28, fig. 1 (1813)

Sepals somewhat leathery, ovate or ovate-lanceolate, tomentose without, villous within; the 3 inner with membranous margins. *Petals* 5, somewhat fleshy, about as long as the sepals, oblong or elliptic, glabrous or villous within, imbricate. *Disc* thick, 10-furrowed or 5-lobed. *Stamens* 10, inserted at the base of the disc; filaments subterete, the basal portions lying in depressions in the disc, nude. *Ovary* globose, semi-immersed in the disc, 5-chambered, with an apical pendulous ovule in each chamber, villous; style short, terete or 5-furrowed; stigmas 1—5, simple. *Fruit* a fleshy drupe, oily, 1-locular, 1-seeded. *Seed* pendulous; cotyledons thick, endosperm 0.

Shrubs or trees, spiny; leaves alternate, 2-foliolate; leaflets obovate, elliptic, or ovate-elliptic; inflorescence an axillary cyme.

Species 28, mostly African, but also found in the Malay Peninsula; 2 species in South Africa recorded from the northern Transvaal and Natal. (Type: *B. aegyptiaca* Delile)

91. RUTACEAE

Flowers bisexual or unisexual. *Petals* 4—5, rarely 0, hypogynous or perigynous, imbricate or rarely valvate. *Stamens* inserted at the base or rarely on the margin of a disc, equalling the number of petals or twice as many, very rarely fewer or many, free or more rarely connate at the base or adnate to the petals; anthers 2-theous, usually glandular at the apex. *Staminodes* sometimes present, various, sometimes very small. *Disc* between the ovary and the stamens, rarely absent, often annular or cushion-shaped, sometimes tubular or produced into a gynophore, often lining the bottom of the calyx. *Gynaecium* of 4—5-carpels which are more or less free, rarely more or fewer, or ovary superior, 4—5- (rarely 1-) chambered, with usually 2 ovules in each carpel or ovary-chamber; styles distinct or connate, terminal, ventral, basal, or lateral on the ovary. *Fruit* usually breaking up into 1-seeded cocci, more rarely a 1- or 4—5-locular drupe, rarely a capsule. *Seeds* oblong or reniform in outline; embryo straight or curved; endosperm present or 0.

Trees or shrubs, very rarely herbs, frequently aromatic; leaves opposite or alternate, simple or digitately 1—5-foliolate or pinnate, gland-dotted; stipules 0; inflorescence a terminal or axillary umbel, head, spike, raceme, panicle, or flowers solitary.

Genera about 116, with close on 800 species, found in all warm and temperate regions, most numerous in South Africa and Australia.

- | | | |
|--|-----------------------------------|----|
| 1. Leaf-rhachis prominently winged ... | 21. <i>Citropsis</i> Engl. | |
| Leaf rhachis not winged | | 2 |
| 2. Leaves compound, pinnate, or 3-foliolate ... | | 3 |
| Leaves simple | | 11 |
| 3. An aromatic shrub; stamens 8 ... | 2. <i>Thamnosma</i> Torr. & Frem. | |
| Trees or large shrubs, not aromatic; stamens 4—5 | | 4 |
| 4. Leaves pinnate | | 5 |
| Leaves 3-foliolate | | 6 |
| 5. Small trees with spiny branches; flowers unisexual; stamens 4; ovary 1-chambered | 1. <i>Fagara</i> Linn. | |
| Unarmed trees or shrubs; flowers bisexual; stamens 8; ovary 4—5-chambered | 20. <i>Clausena</i> Burm. f. | |

6. Small aromatic shrubs; fruit a 2-locular didymous capsule
 2. *Thamnosma* Torr. & Frem.
 Large shrubs or trees, not aromatic; fruit a drupe 7
7. Stamens twice as many as the petals 8
 Stamens as many as the petals 9
8. Rudimentary ovary very small; fruit not warted
 16. *Vepris* Comm.
 Rudimentary ovary large; fruit warted **18. *Toddaliopsis* Engl.**
9. Gynaecium of a single carpel or carpels united 10
 Gynaecium of 2—4 more or less free carpels; carpels becoming quite free
 in fruit, often 1—3 aborting but evident **15. *Oricia* Pierre**
10. Scrambling plants; branches armed with prickles; ovary 5—7-chambered
 17. *Toddalia* Juss
 Trees or shrubs; branches unarmed; ovary 1-chambered
 19. *Teclea* Delile
11. Flowers bisexual; fruit a 2-locular didymous capsule with 4—6 seeds in
 each loculus, or fruit of more or less separate cocci 14
 Flowers unisexual; fruit linear-oblong or lanceolate, tipped with the
 persistent style or produced into a straight beak or fruit fleshy,
 ellipsoid or globose 12
12. Petals 0... .. **14. *Empleurum* Ait.**
 Petals 4—5 13
13. Leaves needle-like; fruit tipped with the persistent style
 13. *Empleuridium* Sond.
 Leaves not needle-like; fruit fleshy, ellipsoid or globose
 19. *Teclea* Delile
14. Sepals and petals 4; stamens 4—8; fruit a 2-locular didymous capsule,
 with 4—6 seeds in each loculus ... **2. *Thamnosma* Torr. & Frem.**
 Sepals and petals 5; stamens 5; staminodes sometimes present 15
15. Fertile stamens 5; staminodes 0 16
 Fertile stamens 5; staminodes 5, sometimes very small and sometimes
 adnate to the claw of the petals 19
16. Disc almost completely enclosing the ovary and perforated by the style;
 ovary 3-lobed **12. *Macrostylis* Bartl. & Wendl.**
 Ovary not completely hidden by the disc; usually 5-lobed 17
17. Ovary villous; petals clawed and with the claw of the petals pilose
 10. *Phyllosma* Bolus
 Ovary glabrous; petals sessile or clawed, naked or transversely bearded 18
18. Petals naked **9. *Diosma* Linn.**
 Petals transversely bearded **11. *Euchaetis* Bartl. & Wendl.**
19. A large tree; flowers in large panicles **3. *Calodendrum* Thunb.**
 Small aromatic shrubs or undershrubs; flowers not paniced 20
20. Staminodes adnate to or hidden in the channelled claw of the petals
 7. *Coleonema* Bartl. & Wendl.
 Staminodes free from the petals, rarely adnate to them but, if so, then
 claw of petals not deeply channelled 21
21. Stigma capitate 22
 Stigma not capitate 23

22. Petals sessile or with very short claws, naked within; anthers tipped with a stalked gland 6. *Adenandra* Willd.
 Petals usually long clawed; claw ciliate or pilose rarely glabrous or bearded 8. *Acmadenia* Bartl. & Wendl.
23. Ovary 5-lobed... .. 4. *Barosma* Willd.
 Ovary usually 3-lobed, more rarely 2—4-lobed 5. *Agathosma* Willd.

3991

1. *FAGARA* Linn., Syst., ed. 10, p. 897 (1759)

(*Fagara* Duhamel *Xanthoxylon* of Fl. Cap. also included in *Zanthoxylum* by some authors).

Plants monoecious or dioecious. *Sepals* 4, small, ovate, ciliate. *Petals* 4, free, much longer than the sepals, ovate or lanceolate. *Male flowers*:—*Stamens* 4, opposite the sepals; filaments linear; anthers subglobose. *Ovary* rudimentary. *Female flowers*:—*Staminodes* rudimentary or absent. *Ovary* obliquely obovate, with the 2 sutures distinct, 1-chambered, with 2 apical ovules, with immersed glands; style simple, terete, shorter than the ovary and obliquely inserted; stigma capitate. *Fruit* a globose capsule, crustaceous, with immersed glands. *Seed* solitary, black, shining.

Small trees with spiny branches; the thicker stems usually with large knobs; leaves alternate, pinnate; leaflets 3—9-jugate, ovate-lanceolate or lanceolate, shortly toothed or crenate, with immersed glands; inflorescence a panicle.

An African, East Indian, and American genus of about 20 species; 4 species occur in South Africa and extend from the Transvaal, through Swaziland and Natal and the eastern districts to the Uitenhage, George, Knysna, and Humansdorp districts. (Type: *F. pterota* Linn.)

NOTE.—The genus *Fagara* Linn. differs from *Zanthoxylum* Linn. in having petals; no apetalous forms have been described from Africa. For an account of the genera *Xanthoxylon* and *Fagara* see Bibliography.—E. P. P.

4014

2. *THAMNOSMA* Torr. & Frem., Fremont, Rep., p. 313 (1845)

Calyx 4-lobed or sepals 4, small. *Petals* 4, sessile, longer than the sepals, suborbicular, entire, imbricate. *Disc* cupular, crenate, or lobed. *Stamens* 8, inserted at the base of the disc; filaments linear or subulate. *Ovary* sessile or stalked, 2-lobed, 2-chambered, with several ovules in each chamber, covered with immersed oil glands; style simple; stigma capitate. *Fruit* a leathery or crustaceous capsule, 2-lobed, 2-locular, with 4—6 seeds. *Seeds* subreniform, smooth or rough; embryo curved; endosperm fleshy.

Shrubs or herbs shrubby at the base, leafy or almost leafless, with immersed glands, strong-scented; leaves alternate, simple or rarely 3-foliolate, linear or cuneate, entire or rarely slightly lobed at the apex; flowers pedicelled in subracemes at the apex of the branches.

Species about 6 found in North America, Arabia, and the Island of Socotra; 1 species recorded from the Transvaal and South West Africa. (Type: *T. montana* Torr. & Frem.)

4035

3. *CALODENDRUM* Thunb., Nov. Gen., vol. 2, p. 41 (1872)

(*Calodendron* Thunb.)

Sepals 5, somewhat fleshy, ovate, valvate, spreading and star-shaped when mature. *Petals* 5, spreading or reflexed, much longer than the sepals, linear, imbricate. *Disc* cupular. *Stamens* usually 10, sometimes less, usually 5 fertile and equalling the petals and 5 in the form of petaloid staminodes which have immersed glands; filaments terete; anthers oblong, with an apical immersed gland. *Ovary* stalked, ovoid, 5-lobed, 5-chambered,

tuberculate and lobed with stipitate glands at the apex, with 2 ovules in each chamber; style simple, terete, much longer than the ovary, glandular; stigma subcapitate. *Fruit* large, a woody subglobose 5-angled capsule; valves covered with blunt protuberances. *Seeds* 2, large, black, shining, oily; cotyledons fleshy.

A large tree; leaves opposite, petioled, large, simple, elliptic, obovate or lanceolate, gland-dotted; stipules 0; inflorescence a large terminal paniced raceme.

Endemic; species 1, found in the Transvaal, Natal, to the Swellendam district. (Type: *C. capense* Thunb.)

4036 4. BAROSMA Willd., Enum Pl. Hort. Berol., p. 257 (1809)

Flowers usually bisexual, occasionally with unisexual flowers on the same plant. *Calyx* 5-fid or 5-partite. *Petals* 5 imbricate, oblong, linear, or oblong-spathulate, sessile or with a short broad claw, usually longer than the calyx. *Disc* annular. *Stamens* 5, inserted on the outer margin of the disc, shorter or longer than the petals; filaments subterete or linear, glabrous or pilose; anthers oblong or ovate, blunt or with a small apical gland; staminodes 5, shorter than the stamens, petaloid or linear, with a gland at the apex. *Ovary* deeply 5-lobed, with an appendage to each lobe, with 2 ovules in each chamber; styles central, longer or shorter than the stamens, glabrous or pilose at the base; stigma small. *Fruit* of 5 beaked compressed glandular punctate cocci.

Small erect shrubs; leaves opposite, rarely alternate, lanceolate, oblong, obovate, or ovate, flat or with revolute margins, with the margins entire or glandular-crenate; flowers axillary, solitary, 2-nate, or arranged in a subcorymbose inflorescence; bracts often present; bracteoles present.

Endemic; species about 36, mostly found in the south-western districts of the Cape Province; 1 species reaches Natal. (Type: *B. serratifolia* (Curt.) Willd.)

NOTE.—N. S. Pillans (see Bibliography) has sunk this genus under *Agathosma*.—E. P. P.

4037 5. AGATHOSMA Willd., Enum. Pl. Hort. Berol., p. 259 (1809)

Flowers rarely unisexual. *Calyx* unequal or subequal, 5-partite. *Petals* 5, slightly longer than to much longer than the calyx, narrow, often spathulate, clawed, with the claw often pilose or hispid. *Disc* cupular, with a crenate or lobed margin. *Stamens* 5, sometimes unequal, inserted on the outer margin of the disc; filaments often terete, glabrous; anthers with an apical gland; staminodes 5, sometimes short, sometimes long and linear, often resembling the petals. *Ovary* immersed in the disc, 2—4-lobed, with the lobes often shortly horned; ovules 2 in each chamber; style sometimes obsolete, often terete, long or short; stigma simple.

Erect woody bushes, rarely shrubs; leaves alternate, rarely opposite, usually ericoid, often imbricate, flat or sub-3-angled, sometimes ovate, linear-lanceolate or linear, rarely apiculate; inflorescence an umbel or head at the apex of the branches, very rarely axillary; bracteoles 2.

Endemic; described species 134, mainly massed in the south-western districts of the Cape Province, but extending to the Albany district. (Type: *A. villosa* (Willd.) Willd.)

4038 6. ADENANDRA Willd., Enum. Pl. Hort. Berol., p. 256 (1809)

Flowers sometimes glutinous. *Calyx* 5-partite; lobes linear, lanceolate, or ovate. *Petals* 5, sessile or with very short claws, obovate, naked on the claws. *Disc* cupular, 5—10-lobed. *Stamens* 5, shorter than the calyx, inserted on the outer margin of the disc; filaments terete or linear, glabrous or pilose; anthers oblong or ovate, with a stalked spoon-shaped, rarely globose, gland at the apex; staminodes 5, each tipped with a concave or globose gland,

sometimes pilose. *Ovary* surrounded by the disc, 5-lobed, 5-chambered, with 2 ovules in each chamber, covered with stalked glands; style simple, usually terete; stigma discoid, 5-lobed. *Fruit* breaking up into separate cocci, equalling or exceeding the calyx, obtuse or horned, glandular-muricate.

Small virgate or much-branched bushes, rarely shrubs; leaves alternate, rarely opposite, elliptic, lanceolate, or linear, entire, sometimes ciliate or pectinate, often with 2 glands at the base of the petiole; flowers terminal, solitary or arranged in a subumbellate raceme.

Endemic; species 39, found in the south-western districts of the Cape Province; 1 species extends to the George district. (Type: *A. uniflora* (L.) Willd.)

4039 **7. COLEONEMA** Bart. & Wendl., Beitr. zur Bot. Diosmeae, pt. 1, p. 55, fig. A.3 (1824)

Calyx 5-partite; lobes ovate or lanceolate, sometimes acuminate, often with membranous and ciliate margins. *Petals* 5, longer than the calyx, obovate or spatulate, sometimes acuminate, narrowed into a usually channelled claw, glabrous. *Disc* cupular or 5-lobed and with the lobes 2-fid. *Stamens* 5, inserted on the outer margin of the disc; filaments subterete, glabrous; anthers with a small apical gland. *Gynaecium* of 5 carpels, nude or glandular at the apex, horned, with 2 ovules in each carpel; style simple, terete; stigma capitate, 5-lobed, sometimes sessile. *Fruit* of 5 compressed rough cocci horned at the apex.

Ericoid bushes or shrubs; leaves alternate, linear or aciculate; flowers very shortly pedicelled, solitary or few at the apices of the branches; bracts and bracteoles present.

Endemic; species 5, mostly of the south-western districts of the Cape Province but extend to the Uitenhage district. (Type: *C. album* (Thunb.) B. & W.)

4040 **8. ACMADENIA** Bart. & Wendl., Beitr. zur Bot. Diosmeae, pt. 1, p. 59 (1824)

Calyx 5-partite; segments oblong, oblong-lanceolate, spatulate, or ovate, usually with membranous ciliate margins, rarely with stalked glands on the margins. *Petals* 5, usually long-clawed, more rarely sessile or subsessile, ovate or obovate-spatulate, usually with the claws ciliate or pilose, more rarely claws bearded or glabrous. *Disc* cupular, with an entire or 5-lobed margin, very rarely not prominent. *Stamens* 5, inserted on the outer margin of the disc; filaments subterete, often narrowing upwards; anthers usually with a sessile conical gland, very rarely gland absent; staminodes free from the petals, linear, rarely minute or small and conical, usually with a gland at the apex. *Ovary* usually 5-lobed, more rarely 3—4-lobed, usually enclosed in the disc, very rarely free from the disc, usually horned, with the horns frequently 2-lobed, with 2 ovules in each chamber, glandular or glabrous, very rarely pilose; style simple, terete, sometimes very short; stigma capitate or globose, sometimes almost sessile. *Fruit* breaking up into 5 cocci, transversely rugose, horned.

Ericoid bushes; leaves opposite or alternate, simple, linear or elliptic, rarely spatulate, often keeled, sometimes imbricate, sometimes ciliate; flowers solitary, rarely 2—3-nate or crowded, surrounded by the upper leaves; bracts present.

Endemic; species about 29, mostly found in the south-western districts of the Cape Province, but recorded as far east as Kaffraria.

4041 **9. DIOSMA** Linn., Sp. Pl., ed. 1, p. 198 (1753)

Calyx 5-partite; segments usually ovate, sometimes oblong, sometimes keeled, usually ciliate, rarely acuminate. *Petals* 5, sessile, longer than the calyx,

usually ovate, sometimes ciliate, otherwise glabrous. *Disc* fleshy, saucer-shaped, 5-lobed, rarely with a gland on the lobes. *Stamens* 5, inserted on the outer margin of the disc, usually shorter than the petals; filaments subterete; anthers usually oblong, rarely ovate, with a sessile apical gland, rarely with a stalked gland. *Ovary* inserted at the bottom of the disc and not enveloped by it, 5-lobed, often with the lobes horned, rarely with a gland on the lobes, 5-chambered, with 2 ovules in each chamber; style simple, terete, sometimes shorter than the ovary; stigma capitate, more rarely simple. *Fruit* of 5 cocci which are transversely rugose and horned.

Ericoid bushes, rarely shrubs; leaves alternate or opposite, linear or acicular, sometimes imbricate, often keeled and ciliate; flowers shortly pedicelled, solitary or fasciated at the ends of the branches.

Endemic; species 15, mainly in the south-western districts of the Cape Province, but extend a little to the east of the Albany district. (Type: *D. oppositifolia* Linn.)

4042 10. PHYLLOSMA Bolus ex. Schltr., Engl. Bot. Jahrb., vol. 24, p. 457 (1898)

Calyx 5-partite; segments lanceolate, shortly and bluntly acuminate, keeled, ciliate. *Petals* 5, with an elliptic limb and a long claw; claw pilose. *Disc* saucer-shaped, shortly 5-lobed, with each lobe very shortly 2-fid. *Stamens* inserted on the outer margin of the disc; filaments subterete, a little shorter than the petals, pilose; anthers broadly elliptic, with a sessile apical gland. *Staminodes* 0. *Ovary* 5-lobed, 5-chambered, with 2 ovules in each chamber, shortly villous above; style simple, about as long as the stamens, pilose; stigma small. *Fruit* unknown.

An erect branched pubescent undershrub; leaves scattered or the upper subopposite, linear, with revolute and thickened margins; flowers very shortly pedicelled, terminal, solitary or often fasciated; bracteoles 2.

Endemic; species 1, recorded from the Ceres and Clanwilliam districts. (Type: *P. capensis* Bolus)

4043 11. EUCHAETIS Bartl. and Wendl., Beitr., zur Bot. Diosmeae, pt. 1, p. 15 (1824)

Calyx 5-partite; segments lanceolate or linear, sometimes subacuminate, usually with membranous ciliated margins. *Petals* sessile, lanceolate or spatulate, sometimes acuminate, transversely bearded within. *Disc* cup-like, 5-lobed or almost truncate. *Stamens* 5, inserted on the outer margin of the disc; filaments subterete, longer or shorter than the anthers; anthers oblong, with a globose sessile gland. *Ovary* immersed in the disc, usually 5-lobed, very rarely 3-lobed, 5- (very rarely 3-) chambered, with 2 ovules in each chamber; style simple, terete, longer or about as long as the ovary; stigma capitate or simple. *Fruit* of 5 cocci, transversely rugose, horned.

Ericoid bushes; leaves opposite, rarely alternate, 3-angled or -keeled, linear or lanceolate, often imbricate or closely pressed to the branches, sometimes densely pubescent; flowers very shortly pedicelled, subsolitary or in heads at the apex of the branches; bracteoles 2.

Endemic; species 12, mostly confined to the south-western districts of the Cape Province, but extend into the Riversdale district. (Type: *E. glomerata* B. & W.)

4044 12. MACROSTYLIS Bartl. & Wendl., Beitr. zur Bot. Diosmeae, pt. 1, p. 191 (1824)

Calyx 5-partite; segments ovate, lanceolate, or oblong, usually keeled, ciliate. *Petals* 5, subsessile or clawed, oblong or spatulate, bearded at the middle. *Disc* cup-shaped, with the mouth contracted, enclosing the ovary.

Stamens 5, inserted on the outside near the base of the disc; filaments subterete, often longer than the petals; anthers oblong, with a sessile globose apical gland; staminodes 0. *Ovary* 3-lobed, 3-chambered, with 2 ovules in each chamber; style basal, simple, terete, about as long as the petals; stigma simple or capitate. *Fruit* of three horned cocci.

Suberect or depressed ericoid shrublets; leaves small, alternate and opposite, rarely reflexed, usually linear, more rarely ovate, usually keeled and ciliate; inflorescence a subumbel or head at the ends of the branches; peduncles short; bracts present.

Endemic; species described 12, massed in the south-western districts of the Cape Province, also recorded from the Knysna and Uitenhage districts.

4045 13. EMPLEURIDIUM Sond., in Harv. & Sond. Fl. Cap., vol. 1, p. 442 (1859—60)

Plants dioecious. *Calyx* 4-partite; segments ovate, acute. *Petals* 4, deciduous, sessile, ovate-suborbicular. *Disc* prominent, 4-lobed. *Male flowers*:—*Stamens* 4, inserted on the margin of the disc, opposite the calyx-segments, shorter than the petals; filaments terete; anthers without an apical gland. *Female flowers*:—not seen. *Fruit* linear-oblong, 1-locular, tipped with the persistent style.

Small glabrous undershrub; leaves scattered, needle-like, without glands; flowers small, axillary, solitary, pedicelled; bracteoles 2.

Endemic; species 1, recorded from the Caledon district. (Type: *E. juniperinum* Sond. & Harv.)

4046 14. EMPLEURUM Ait., Hort. Kew., ed. 1, vol. 3, p. 340 (1789)

Plants monoecious. *Calyx* subcampanulate; lobes somewhat thick, ovate and obtuse or linear and subacute. *Petals* 0. *Disc* 0, inconspicuous in the female flower. *Male flowers*:—*Stamens* 4, opposite the calyx-lobes; filaments shorter than the anthers; anthers thick, oblong, with 2 shoulders and a large gland between the shoulders or linear-lanceolate with an apical conical gland. *Female flower*:—*Ovary* sessile, 1-chambered, with a large glandular appendage larger than the ovary, with 2 ovules; style lateral, thick, linear-lanceolate, nearly as long as the ovary; stigma simple. *Fruit* lanceolate, produced into a beak. *Seed* black, shining, oblong in outline.

An erect shrub; leaves alternate, long and linear-lanceolate or small and lanceolate, apiculate, with entire or crenulate margins; flowers small, axillary, solitary or 2—3-nate; bracteoles present.

Endemic; species 2, extending from the south-western districts of the Cape Province to the Uitenhage district. (Type: *E. unicapsularis* (L.) Skeels)

4070 15. ORICIA Pierre, Bull. Soc. Linn. Paris, vol. 2, p. 1288 (1897)

Flowers unisexual, with occasional bisexual flowers. *Calyx* saucer-shaped, shortly 4-lobed. *Petals* 4, much longer than the calyx, ovate, obtuse. *Male flowers*:—*Stamens* 4; filaments linear; anthers oblong, without apical glands. *Ovary* rudimentary. *Female flowers*:—*Ovary* of 2—4 carpels, cohering or variously free, with 2 ovules in each chamber, hispid; style very short, terete; stigma large and peltate. *Stamens* rudimentary. *Fruit* of 2—4 distinct carpels, 1—3 of which often abort but persist. *Seed* solitary in each loculus; endosperm 0.

Trees; leaves 3—5-foliolate, very often large, sometimes leaves subtending the inflorescence much reduced; leaflets lanceolate, sometimes subacuminate; inflorescence an axillary and terminal raceme or panicle; pedicels flattened, tomentose.

Species 8, all African; 3 species recorded from the northern Transvaal and the Kentani district.

4076 16. VEPRIS Comm. ex A. Juss., Mém. Mus. Paris, vol. 12, p. 509 (1825)

Plants dioecious. *Calyx* cup- or saucer-shaped, very shortly 4-lobed, rarely 2-lobed. *Petals* somewhat fleshy, 4 (in an Indian species 2), much longer than the calyx, oblong, obtuse. *Male flowers*:—*Stamens* 8 (in an Indian species 4), as long as or longer than the petals; filaments linear; anthers without apical glands. *Ovary* rudimentary, 2—4-angled or with 2—4 styles. *Female flowers*:—*Staminodes* 8, small, with rudimentary anthers. *Ovary* 2—4-chambered, with 2 ovules in each chamber; style very short; stigma large, sessile, peltate. *Fruit* 2—4-locular, sometimes only 1 loculus developed; loculi 1-seeded. *Seed* with endosperm.

Unarmed trees or shrubs; leave digitately 1—3- (rarely 2—4-) foliolate, gland-dotted; leaflets usually lanceolate, sometimes with crinkled margins; inflorescence a terminal and axillary cyme, panicle, or raceme.

Species 15, mostly African, found also in the Mascarene Islands, 1 species in India; 2 species in South Africa, extending from the Transvaal, through Natal to the George and Knysna districts. (Type: *V. lanceolata* (Lam.) G. Don)

4077 17. TODDALIA Juss., Gen., p. 371 (1789)

Plants dioecious. *Calyx* small and cup-shaped or sepals free; lobes or sepals ovate. *Petals* 5, somewhat fleshy, much longer than the calyx, oblong, obtuse, sometimes boat-shaped. *Male flowers*:—*Stamens* as many as the petals; filaments shorter than the anthers; anthers sagittate at the base, without an apical gland. *Ovary* rudimentary. *Female flower*:—*Staminodes* small. *Ovary* sessile, 5—7-chambered, with 2 ovules in each chamber; style large, sessile, 5—7-lobed. *Fruit* a fleshy drupe, about the size of a pea, 3—7-locular, punctate. *Seed* solitary in each loculus.

Woody scramblers; branches usually armed with recurved prickles, glabrous or rusty pubescent; leaves 3-foliate; leaflets lanceolate or obovate, usually acuminate or subacuminate, slightly crenulate on the margins, gland-dotted; inflorescence an axillary and terminal panicle, rusty pubescent.

Species 1, found in all tropical and subtropical countries; recorded from the northern Transvaal. (Type: *T. asiatica* Lam.)

4078 18. TODDALIOPSIS Engl., Pflanzenwelt Oost Afr. Nachtrag II zu Theil C.S. 228, p. 433 (1895)

Plants dioecious. *Sepals* 4, free almost to the base, small, obovate or suborbicular. *Petals* 4, much longer than the sepals, elliptic. *Stamens* 8, not exceeding the petals; filaments threadlike or thick and broadly linear in outline, slightly longer than the anthers, mealy; anthers without an apical gland. *Ovary* large but functionless. *Female flower*:—*Disc* prominent, lobed, surrounding the base of the ovary. *Staminodes* 8, about $\frac{1}{2}$ as long as the petals, linear, with rudimentary anthers. *Ovary* thick-walled, closely warted, 4-chambered, rarely 3-chambered; style very short and thick; stigma peltate, 4-lobed. *Fruit* brown, ellipsoid or more or less globose, densely warted, usually only 1 loculus developed. *Seed* solitary; cotyledons thick; endosperm 0.

Shrubs or small trees; leaves 3-foliate; leaflets lanceolate or elliptic-lanceolate, subacuminate, gland-dotted, glabrous; inflorescence a small axillary panicle.

Species 2; 1 found in tropical Africa, the other in the northern Transvaal. (Type: *T. sansibarensis* Engl.)

4085 **19. TECLEA** Delile, Ann. Sc. Nat. 2, Ser. 20, p. 90 (1843)

Plants dioecious. *Calyx* cup-shaped, with 4—5 very short lobes, sometimes sepals almost free. *Petals* 4—5, somewhat fleshy, longer than the calyx, elliptic-oblong, or elliptic-obtuse, sometimes cucullate at the apex; in male flowers sometimes joined at base. *Male flowers*.—*Stamens* as many as the petals, usually shorter than the petals; filaments sometimes only as long as the anthers, linear; anthers without apical glands. *Ovary* rudimentary, with or without a single style, sometimes pilose. *Female flowers*.—*Staminodes* as many as the petals, small, linear. *Disc* sometimes present. *Ovary* sessile, globose, 1-chambered, with 2 ovules, smooth or warted and pilose; style very short and thick or evident and terete; stigma large, peltate, sometimes subsessile. *Fruit* fleshy, ellipsoid or globose, 1-locular, 1-seeded. *Seed* with fleshy cotyledons; endosperm 0.

Unarmed shrubs or trees; leaves 1—3-foliolate; leaflets lanceolate, elliptic-lanceolate, or obovate, gland-dotted; inflorescence a terminal or axillary panicle, raceme, cyme, or spike.

Species 22, found in Africa, the Comoro Islands, and Madagascar; 2 species in South Africa, recorded from Natal and the eastern districts to the Bathurst district. (Type: *T. nobilis* (Hook f.) Delile)

4091 **20. CLAUSENA** Burm. f., Fl. Ind., p. 243 (1768)

Flowers bisexual. *Calyx* small, 4—5-lobed or -partite. *Petals* 4—5, thin and membranous, free, veined. *Stamens* 6—10, free; filaments flattened; anthers without apical glands. *Disc* stalk-like. *Ovary* seated on top of disc, 4—5- (rarely 2—3-) chambered, with 2 ovules in each chamber; style often distinct, flattened, at length deciduous; stigma obtuse, entire or 2—5-lobed. *Fruit* fleshy, ovoid, ellipsoid or globose, 2—5-chambered, sometimes with 1 or more loculi abortive. *Seeds* oblong in outline.

Unarmed trees or shrubs; leaves imparipinnate, deciduous; leaflets lanceolate, sometimes unequal-sided at the base, with entire or crenulate margins; inflorescence a terminal or axillary panicle or lax raceme.

Species about 46, natives of Africa and the Indo-Malayan region; 1 species found in South Africa, extending from the Transvaal to the Humansdorp, George, and Knysna districts. (Type: *C. excavata* Burm. f.)

4092a **21. CITROPSIS** (Engl.) Swingle & Kellerman, Journ. Agric. Research, vol. 1, p. 419 (1913—14)

Flowers bisexual, 4- (rarely 5-) merous. *Calyx* small. *Petals* much longer than the sepals, oblong, obtuse. *Disc* subtending and slightly longer than the base of the ovary. *Stamens* twice as many as the petals, arranged to form a staminal-tube surrounding the gynaecium. *Ovary* 4- (rarely 5-) chambered, with a single ovule in each chamber; style long, deciduous; stigma large, subglobose, more or less 4- (rarely 5-) lobed. *Fruit* globose or subglobose, with a fleshy pericarp dotted with oil glands, pulpy within. *Seeds* with a parchment-like testa; cotyledons fleshy; endosperm 0.

Shrubs or small trees; branches spiny, with the spines large and usually in pairs but sometimes solitary; leaves imparipinnate, 5- or rarely 7-foliolate, sometimes 3-foliolate or 1-foliolate, subcoriaceous, gland-dotted, with the common petiole winged; leaflets elliptic or lanceolate, with slightly crenate margins; flowers arranged in few- or many-flowered axillary clusters.

Species 3 or 4, all African; 1 species recorded from the Chobe River in British Bechuanaland. (Type: *C. schweinfurthii* (Engl.) Swingle & Kellerman)

92. SIMARUBACEAE

Plants sometimes monoecious. *Flowers* unisexual or bisexual with occasional unisexual flowers on the same plant, rarely bisexual, regular. *Calyx* 3—5-fid or -partite, or sepals free. *Petals* as many as the sepals, very rarely 0, imbricate or valvate. *Disc* annular, cup-like, tumid, or produced into an elongated gynophore, entire or lobed, rarely 0. *Stamens* as many as or twice as many as the petals, inserted at the base of the disc, shorter than or as long as the petals; filaments free, naked, pilose, or with an adnate scale at the base; anthers oblong, 2-theous, usually opening inwards by longitudinal slits. *Ovary* superior, very often 2—5-lobed, rarely entire, 1—5-chambered, or gynaeceum of 3—5 carpels, with the ovules usually solitary or in pairs; styles free or connate or simple and terminal in the undivided ovaries; stigma simple or capitate. *Fruit* dry or fleshy, indehiscent, rarely dehiscent, sometimes winged. *Seeds* very often solitary, pendulous; embryo straight or curved; endosperm copious, scanty, or 0.

Shrubs or trees, usually characterized by a bitter principle in the bark; leaves alternate, rarely opposite, pinnate, rarely 1—3-foliolate or simple; leaflets very rarely glandular; stipules 0; inflorescence mostly an axillary panicle or raceme, rarely a spike or a cymose-corymb or flowers solitary.

Genera 30, with over 100 species, found in all tropical and warm countries.

4128 KIRKIA Oliv., Fl. Trop. Afr., vol. 1, p. 310 (1868)

Flowers bisexual or occasionally with unisexual flowers on the same plant. *Calyx* 4-partite; segments ovate or ovate-oblong, obtuse, glabrous or pilose. *Petals* 4, free, longer than the calyx, ovate, oblong, or sometimes boat-shaped, usually glandular at the base within. *Disc* fleshy, annular or tumid. *Stamens* 4, alternating with the petals and longer or shorter than them, inserted on the outside of the disc; filaments somewhat flattened or subterete, without appendages; anthers oblong. *Ovary* very small or large, 4-lobed, 4-chambered, with a solitary ovule in each chamber; styles distinct and very short or longer and simple; stigmas simple or capitate. *Fruit* dry, oblong in outline, sharply 4-angled, at length separating into 4 one-seeded cocci. *Seeds* without endosperm.

Trees; leaves usually clustered at the ends of the branches, pinnate; leaflets many, linear or lanceolate, sometimes acuminate, sometimes apiculate, sometimes slightly crenate; flowers in numerous peduncled cymose corymbs from the axils of the upper leaves.

Species 8, all African; 3 species described from the Transvaal and British Bechuanaland. (Type: *K. acuminata* Oliv.)

93. BURSERACEAE

Plants sometimes dioecious. *Flowers* bisexual or unisexual or bisexual with occasional unisexual flowers. *Calyx* 3—5-fid or -partite, imbricate or valvate. *Petals* 3—5, rarely 0, erect or spreading, free or very rarely connate, deciduous, imbricate or valvate. *Disc* annular or cup-like, rarely inconspicuous, free or adnate to the calyx-tube. *Stamens* as many as or twice as many as the petals, inserted at the base of the disc, equal or unequal, or the alternate longer; filaments free; anthers subglobose or oblong, 2-theous. *Ovary* superior, 2—5-chambered, very rarely 1-chambered, 3-angled, ovoid or globose, with 2, very rarely 1, ovules in each chamber; style short; stigma simple or capitate, or 2—5-lobed. *Fruit* drupaceous or capsular. *Seed* pendulous; endosperm 0.

- | | | |
|--|----------------------------------|---|
| 2. Disc cup-shaped; stamens 8, with the filaments connate at the base; fruit inflated | 3. <i>Nymania</i> Lindb. | |
| Disc 0; stamens 10, with the filaments connate into a long cylindric tube; fruit not inflated | 4. <i>Turrea</i> Linn. | |
| 3. Filaments free... .. | 1. <i>Ptaeroxylon</i> E. & Z. | |
| Filaments connate | | 4 |
| 4. Ovary with several ovules in each chamber | 2. <i>Entandrophragma</i> C. DC. | |
| Ovary with 2 ovules in each chamber | | 5 |
| 5. Filaments connate to the apex; fruit a berry | 5. <i>Ekebergia</i> Sparrm. | |
| Filaments not connate to the apex; fruit a capsule | 6. <i>Trichilia</i> P. Br. | |

4157 1. PTAEROXYLON E. & Z., Enum., p. 54 (1835)

Plants dioecious. *Calyx* small, 4-partite; segments ovate, minutely ciliate. *Petals* 4, imbricate, at first erect, at length recurved, oblong, obtuse. *Disc* fleshy, obscurely 5-lobed. *Male flowers*.—*Stamens* 4, inserted at the base of the disc, alternating with and shorter than the petals; filaments linear or subterete; anthers oblong. *Ovary* 0. *Female flowers*.—*Stamens* rudimentary. *Ovary* inserted on the disc, 2-chambered, with a solitary ascending ovule in each chamber; styles 2, free or connate; stigmas capitate. *Fruit* a compressed capsule, bilobed at the apex, cordate at the base, 2-locular, 2-seeded, with the loculi internally dehiscing, at length separating and suspended from a bipartite axis. *Seeds* compressed, winged; embryo curved; endosperm 0.

A large tree; leaves alternate or subopposite, pinnate; leaflets opposite, oblong, lanceolate, or obovate, with unequal sides; flowers small; inflorescence a panicle, with the panicles axillary, solitary or fascicled, shorter than the leaves.

Endemic; species 1, extending from the Transvaal and Natal, through the eastern districts to the Uitenhage and Humansdorp districts. (Type: *P. obliquum* (Thb.) Radlk.)

4163 2. ENTANDROPHRAGMA C. DC., Mém. Herb. Boiss., vol. 2, p. 582, t. 12 (1894)

Calyx saucer-shaped; lobes 4—5, ovate. *Petals* 4—5, free, sessile or shortly clawed, much longer than the calyx, oblong, obtuse. *Disc* fleshy, cupular, surrounding the base of the ovary. *Stamens* 10; filaments connate into an urceolate tube about half the length of the petals and sometimes cut into 10 segments almost to the middle, with each segment 2-toothed at the apex; anthers elliptic. *Ovary* small, subglobose, 5-chambered, with several pendulous ovules in each chamber; style cylindric; stigma disciform. *Fruit* a capsule, almost 5-valved to the base, with the valves joined after dehiscence to a 5-winged or 5-angled column. *Seeds* 5 in each loculus, winged; cotyledons broadly ovate; endosperm very scanty.

Trees; leaves pinnate, crowded at the apex of the branches; pinnae 3—9-jugate, ovate, elliptic, oblong, sometimes unequal-sided, sometimes long-acuminate, usually obtuse at the base; inflorescence an axillary panicle.

Species 35, found in tropical Africa; 1 species recorded from the northern Transvaal. (Type: *E. angolense* (Welw.) C. DC.)

NOTE.—This was described by T. A. Sprague (*Kew Bull.*, p. 163 (1908)) as a species of *Pseudocedrela*, but later corrected by him (*Kew Bull.*, p. 180 (1910)).—E. P. P.

- 4168 3. *NYMANIA* Lindb., Not. Saellsk. Fl. Fenn. Förhandl., vol. 9, p. 290 (1868)

(*Aitonia* Thunb.)

Calyx small, deeply 4-partite; lobes ovate, minutely ciliate. *Petals* 4, sessile, strongly imbricated and slightly convolute in aestivation, much longer than the calyx, oblong-elliptic, concave, obtuse. *Disc* fleshy, crenulate. *Stamens* 8, inserted at the base of the disc, or exceeding the petals; filaments linear, connate at the base; anthers oblong. *Ovary* sessile, somewhat flattened, 4-lobed, 4-chambered, with 2 collateral axile ascending ovules in each chamber, villous; style terete, exceeding the stamens; stigma simple. *Fruit* a large inflated membranous capsule, deeply 4-lobed, 4-angled, 4-locular. *Seeds* 1—2 in each loculus, subglobose; testa pubescent; tegmen membranous, papillose and free from testa except at the micropyle (resembles a miniature ox tongue); embryo curved; one cotyledon folded on itself lengthwise and fitting into the concavity of the other cotyledon; endosperm 0.

A shrub; leaves alternate, usually fascicled, linear or linear-lanceolate, entire; flowers solitary, axillary, pedicelled.

Endemic; species 1, typical of the Karoo, but extends to Namaqualand and South West Africa, also found in the Uitenhage and Humansdorp districts. (Type: *N. capensis* (Thunb.) Lindb.)

- 4171 4. *TURRAEA* Linn., Mant., vol. 2, p. 150 (1771)

Calyx small, glabrous or hairy; tube campanulate; lobes 4—5, ovate or lanceolate, usually minutely ciliate. *Petals* 4—5, free, obovate, elliptic, or lanceolate above, narrowed into a long claw. *Disc* 0. *Stamens* 10; filaments connate into a long tube widening upwards; tube 10-toothed or 10-lobed at the summit with the lobes sometimes fimbriate or deeply 2-partite, or 2-notched; anthers usually shortly apiculate. *Ovary* sessile, sometimes ribbed, 5—10—20-chambered, with 2 superposed ovules in each chamber; style filiform, usually longer than, sometimes twice as long as, the staminal-tube; stigma discoid, capitate, or globose. *Fruit* a 5- or many-locular capsule with each loculus 1—2-seeded. *Seeds* subglobose, sometimes with winged margins; embryo slightly curved; cotyledons thick; endosperm copious.

Trees or shrubs or low bushes with a thick deep tap-root; leaves alternate, subsessile or petioled, linear-lanceolate, lanceolate, or obovate, sometimes acuminate, entire or obtusely lobed, glabrous or hairy; flowers elongated, axillary, solitary or fascicled; bracts many.

Species about 86 found in tropical and subtropical countries, especially abundant in Africa, Madagascar, and the Mascarene Islands; 5 species in South Africa, extending from the Transvaal and Natal, through the eastern districts to the Bathurst district. (Type: *T. virens* Linn.)

- 4193 5. *EKEBERGIA* Sparrm., Svenska Vet-Akad. Handl., p. 282, t. 9 (1779)

Plants dioecious, with occasional unisexual flowers. *Calyx* saucer-shaped, often tomentose; lobes 4—5, ovate. *Petals* 4—5, longer than the calyx, often tomentose. *Disc* annular, free or united to the base of the ovary, pubescent or tomentose. *Stamens* 8—10; filaments connate into a basin-shaped or cup-shaped tube, densely pubescent; anthers sessile on the staminal-tube. *Ovary* sessile, 2—4—5-chambered, with 2 pendulous ovules in each chamber; style very short and thick; stigma clavate, discoid or subglobose, often obscurely 4—5-lobed. *Fruit* a dry globose 4—5-locular berry, sometimes by abortion with 1—2 seeds only. *Seed* with a woody testa; cotyledons fleshy; endosperm 0.

Trees; leaves clustered at the end of the branches, alternate, pinnate; leaflets opposite or subopposite, lanceolate, elliptic, or obovate, sometimes acuminate; leaf-rhachis sometimes winged; inflorescence an axillary panicle.

An African genus of 23 species; 3 species in South Africa extending from the northern Transvaal and Natal, through the eastern districts to the George, Knysna and Humansdorp districts. (Type: *E. capensis* Sparrm.)

NOTE.—In all the South African specimens I examined I found the flowers bisexual.—E. P. P.

4195

6. TRICHILIA P. Br., Hist. Jamaic., p. 278 (1756)

Calyx somewhat fleshy, often hairy; lobes 4—5, elliptic. *Petals* 4—5, oblong, ovate or spatulate-oblong, erect or spreading, imbricate. *Disc* annular or cup-shaped, sometimes lobed, free or adnate to the ovary or to the base of the staminal-tube. *Stamens* 8—10; filaments connate or more or less free; free portion of the filaments often densely villous within and with a lateral tooth on each side of the anther. *Ovary* immersed in or free from the disc, 2—4-chambered, with 2 collateral or superposed ovules in each chamber, villous; style short or elongated, terete, villous; stigma capitate or globose, 2—4-lobed. *Fruit* a coriaceous 2—4-locular 2—4-valved capsule, with 1—2 seeds in each loculus. *Seeds* with a fleshy arillus.

Trees or shrubs; leaves alternate, 3-foliolate or imparipinnate; leaflets opposite or alternate, very often multi-jugate, rarely 2-jugate, elliptic; inflorescence an axillary panicle.

Species over 300, natives of America, Africa, and Madagascar; 6 species in South Africa, occurring in the Transvaal, Natal, and through the eastern districts to the Knysna district.

NOTE.—The genus *Willhorstia* C. DC. was described in *Mém. Herb. Boiss.*, No. 10, p. 77 (1900). I have not seen a specimen and as it was described on very incomplete material is only mentioned here.—E. P. P.

95. MALPIGHIACEAE

Flowers bisexual, rarely some unisexual by abortion, mostly regular. *Calyx* 5-partite, imbricate or very rarely valvate, all, or very often fewer, 2-glandular without. *Petals* 5, sessile or clawed, very often fimbriated or toothed, rarely entire. *Disc* inconspicuous. *Stamens* 10, either all perfect or some malformed or without anthers; filaments often connate at the base; anthers 2-theous. *Ovary* superior, 3- (rarely 2—4-) chambered, or gynaeceum of more or less free carpels, with a single ovule in each ovary-chamber or carpel; styles usually 3, more rarely 2, very rarely 1 by abortion, free or connate at the base; stigma terminal or sublateral. *Fruit* breaking up into separate 1-seeded carpels, usually 3, sometimes fewer, sometimes connate into a fleshy or woody drupe, frequently winged, dehiscent or indehiscent. *Seeds* various; embryo straight or curved; endosperm 0.

Trees or shrubs, rarely small shrubs, often climbing; leaves opposite or alternate, sometimes whorled, simple, petioled, usually entire; petiole often with glands; stipules present or absent; inflorescence a corymbose raceme or an umbel, sometimes a panicle, axillary or terminal; bracts and bracteoles usually present.

Genera 61, with about 600 species, mostly massed in America, scantily represented in Africa, and still less so in Asia.

- | | | | | | | |
|------------------------------------|-----|-----|-----|-----|-------------------------------|---|
| 1. Styles 2 | ... | ... | ... | ... | 3. Aridocarpus Guill. & Perr. | |
| Styles 3 | ... | ... | ... | ... | ... | 2 |
| 2. Carpels winged round the margin | ... | | | | 1. Triaspis Burch. | |
| Carpels with an apical wing... | ... | | | | 2. Sphedammocarpus Planh. | |

4206

1. **TRIASPIS** Burch., Trav., vol. 2, p. 280 (1824)

Calyx-tube short; lobes 5, oblong. *Petals* 5, much longer than the calyx, clawed, with the blade usually oblong-elliptic and fimbriated at least near the base. *Stamens* 10, all perfect; filaments linear, often unequal, free or adnate with the base of the ovary; anthers linear-oblong. *Ovary* 3-chambered, winged on the margin, villous; styles 3, distinct, curved above; stigma lateral, immediately below the curved tip of the style. *Fruit* separable, with each fruit-carpel winged on the margin and with the wing forming a shield-like structure with or without a keel or crest in the centre. *Seeds* globose or ellipsoid; embryo hooked.

Shrubs, often scandent; leaves opposite or subalternate, entire, petioled, elliptic, suborbicular, lanceolate, sometimes cordate, sometimes apiculate, eglandular or minutely glandular, glabrous or hairy; stipules subfoliaceous or 0; inflorescence an axillary or terminal panicle, raceme, or corymb, with the flowers in umbels or clusters on the racemes; bracts and bracteoles present.

An African genus of about 42 species; 10 species described from South Africa, extending from the Transvaal to the north-western districts of the Cape Province and South West Africa. (Type: *T. hypericoides* Burch.)

4219

2. **SPHEDAMNOCARPUS** Planch. ex Benth. et Hook. f. Gen. Pl., vol. 1, p. 256 (1862)

Calyx 5-partite, eglandular or the glands not apparent when dry, glabrous or hairy; lobes elliptic. *Petals* shortly clawed, longer than the sepals, with the blade elliptic, toothed or nearly entire. *Stamens* 10, all perfect; filaments somewhat broadened and connate at the base; anthers large, glabrous. *Ovary* 3-chambered, dorsally produced into a wing, hirsute; styles 3, divergent; stigmas sometimes capitate. *Fruit* separable, each fruit-carpel with a vertical dorsal wing. *Seeds* ovoid, acuminate.

Woody climbers; leaves opposite or whorled, petioled, elliptic, lanceolate or ovate, sometimes cordate, often apiculate, glabrous or tomentose; petiole glandular; stipules 0; flowers in umbels, collected in terminal panicles; bracts and bracteoles present.

An African genus of 6 species; 4 species found in the Transvaal and Natal. (Type: *S. angolensis* Planch.)

4220

3. **ACRIDOCARPUS** Guill. & Perr., Fl. Senegamb. Tent., p. 123, t. 29 (1832)

Calyx somewhat leathery, with 1 or more sessile or sunken glands without or rarely eglandular; lobes ovate, obtuse. *Petals* sessile, clawed, or narrowed to the base, obovate, entire or the inner slightly fimbriated. *Stamens* 10, all perfect; filaments short, thick, free or very nearly so; anthers larger than the filaments, ovate or lanceolate-oblong, glabrous, usually opening by a short or pore-like slit. *Ovary* 3-chambered or 1 chamber abortive, dorsally winged, pilose; styles 2, terete, curved inwards, coiled in bud. *Fruit* separable, each fruit-carpel with a straight or oblique dorsal wing. *Seeds* often angled or curved; embryo curved.

Erect or climbing shrubs; leaves usually alternate, lanceolate, oblong, elliptic, or linear-lanceolate, entire or sinuate, with glands at the base beneath; stipules 0; inflorescence a simple elongated corymb or panicle; bracts and bracteoles minute.

Species about 51, natives of Africa, Asia, and Madagascar; 7 species found in the Transvaal, Natal, Pondoland, and the Transkei. (Type: *A. plagiopterus* Guill. & Perr.)

96. POLYGALACEAE

Flowers bisexual, zygomorphic. *Sepals* 5, free, imbricated; the lateral larger and sometimes wing-like. *Petals* 3 or 5, connate at the base and adnate to the staminal-tube; the lowest forming a keel, crested or with wing-like appendages below the apex; lateral petals small, simple or bifid; the posterior one frequently wanting. *Stamens* 8, rarely 5 or 4; filaments usually connate into a slit tube, rarely free; anthers 1—2-theous, usually opening by a pore or valve. *Ovary* superior, 2-chambered, rarely 3—5-chambered or 1-chambered by abortion, with 1, rarely 2—4, pendulous ovules in each chamber; style simple, often dilated and 2-lobed at the apex; stigma frequently lateral. *Fruit* a capsule, samara, or drupe. *Seeds* pendulous, often hairy, often with an aril; embryo straight; endosperm copious and fleshy, or scanty or 0.

Herbs, shrubs, or undershrubs, rarely small trees; leaves alternate, sometimes fascicled, rarely opposite, simple; stipules 0; flowers usually solitary, axillary or terminal, sometimes flowers arranged in a spike or raceme, rarely in a panicle.

Genera 10, with over 400 species, found in all warm and temperate countries.

- | | |
|---|----------------------------|
| 1. Fruit winged; ovary 1-chambered, rarely a second rudimentary chamber | |
| | 2. <i>Securidaca</i> Linn. |
| Fruit a capsule or drupe; ovary 2-chambered | 2 |
| 2. Sepals subequal | 3. <i>Muraltia</i> Neck. |
| Lateral sepals larger than the others, often coloured and wing-like ... | 3 |
| 3. Fruit a capsule; lower petal with a multifid crest below the apex | |
| | 1. <i>Polygala</i> Linn. |
| Fruit a drupe; lower petal with 2 wing-like appendages below the apex | |
| | 4. <i>Mundia</i> Kunth |

4273 1. POLYGALA Linn., Sp. Pl., ed. 1, p. 701 (1753)

Sepals 5; the 2 lateral much larger than the rest, wing-like and coloured, sessile or shortly clawed; the remainder often boat-shaped. *Petals* 3—5, united at the base and adnate to the staminal-tube; the lower petal keel-shaped, usually with a multifid crest below the apex, rarely the crest almost larger than the petal, sometimes densely ciliate; lateral petals smaller, variously shaped, simple or bifid or deeply 2-lobed with the lobes often unequal; posterior petal usually wanting. *Disc* sometimes present. *Stamens* 8; filaments linear, connate into a split tube which is sometimes ciliate; anthers 1-theous, generally vase-shaped, opening at the apex. *Ovary* 2-chambered, sessile, often winged, sometimes reticulated, with a single ovule in each chamber, sometimes ciliate; style curved, linear, sometimes broadened upwards, with an elbow-bend at the apex, more rarely with a lateral projection or with an apical projection; stigma oblique. *Fruit* a membranous capsule, compressed, elliptic, obovate or obcordate, often notched. *Seed* sometimes only 1 developed, usually with an aril, sometimes with a small basal hairy projection, often hairy; embryo straight with oblong cotyledons; endosperm copious or scanty or 0.

Herbs, undershrubs, or shrubs; leaves alternate, more rarely opposite or whorled, simple, cordate, ovate, lanceolate, linear, or ericoid, sometimes rudimentary, glabrous or hairy; inflorescence a terminal or lateral raceme, spike or head.

Species about 959, found in all temperate and warm countries; 95 species described from South Africa, widely distributed. (Type: *P. vulgaris* Linn.)

4275 2. *SECURIDACA* Linn., Sp. Pl., ed. 1, p. 707 (1753)

Sepals 5, unequal; 2 large, coloured, wing-like. *Petals* 3, free, adnate below to the staminal-tube; median petal hooded; if 5 petals present then the 2 upper scale-like. *Stamens* 8; filaments linear, connate into a split tube which is sometimes ciliate; anthers 2-theous, opening by a triangular recurved valve in front. *Ovary* 1-chambered, rarely a rudimentary second chamber present, with a solitary ovule; style inserted obliquely on the ovary, semiterete below, flattened above; stigma terminal. *Fruit* a samara, sometimes reticulated, produced into a variously shaped wing. *Seeds* globose, glabrous; testa somewhat leathery; tegmen loose, membranous; cotyledons thick, fleshy, lumpy; endosperm 0.

Small trees or scandent shrubs, sometimes spiny; leaves alternate, entire, elliptic or oblong; inflorescence a terminal and axillary raceme, often a panicle.

Species about 80, natives of Africa, America, and Asia; 1 species occurs in the Transvaal. (Type: *S. volubilis* Linn.)

4278 3. *MURALTIA* Necker, Elem., vol. 3, p. 62 (1790)

(*Heistera* Linn.)

Sepals 5, dry and membranous, subequal, usually oblong and obtuse, spatulate, lanceolate, sometimes pungent; the 2 lateral somewhat larger than the others. *Petals* 3, united at the base and adnate to the staminal-tube; the lower hooded, with 2 large wing-like appendages below the apex, rarely with only 1 appendage; lateral petals oblong, linear, or ovate, free or cohering by their edges. *Stamens* 8; filaments united into a slit tube; tube usually inflated about the middle; anthers 1-theous. *Ovary* 2-chambered, invariably 4-horned, sometimes hairy, with a single ovule in each chamber; style curved near the apex, usually 2-lobed; stigma usually lateral, very rarely discoid. *Fruit* a membranous capsule, compressed, with 4 horns or tubercles, rarely hornless, sometimes hispid. *Seeds* with an aril, hispid; endosperm present.

Shrubs or undershrubs; leaves usually fascicled, more rarely scattered, ovate, lanceolate, or ericoid, sometimes pungent, sometimes hooked at the apex, sometimes ciliate, glabrous or hairy; flowers small, subsessile, axillary, solitary.

An African genus of 118 species; 116 species in South Africa, massed in the south-western districts of the Cape Province, but extend to the eastern Orange Free State, Natal, and the Transvaal.

4279 4. *MUNDIA* Kunth, Nov. Gen. et Sp., Pl., vol. 5, p. 392 (1821)

Sepals 5; the 2 lateral elliptic, much larger than the others, wing-like and coloured. *Petals* 3, united at the base and attached to the staminal-tube; the lowest keel-shaped, enclosing the stamens, with 2 wing-like appendages below the apex; appendages lobed; lateral petals as long as the lowest, ovate below, oblong above. *Stamens* 8; filaments connate into a slit tube, pilose above; anthers 2-theous. *Ovary* 2-chambered; style compressed and somewhat thickened upwards, with a vertical and horizontal lobe above; stigma on the horizontal lobe. *Fruit* a fleshy 1—2-seeded drupe. *Seed* sparsely pubescent; cotyledons small, oblong; endosperm scanty.

Rigid low shrub, with spine-tipped branches; leaves scattered, entire, oblong, linear, or lanceolate; flowers pedicelled, axillary, solitary.

Endemic; species 1, ranging from the Van Rhynsdorp district through the littoral strip to the East London district. (Type: *M. capensis* (L.) Druce=*M. spinosa* DC.)

97. DICHAPETALACEAE

Flowers bisexual or unisexual, regular or slightly irregular. *Sepals* 5, free or partially connate, imbricate. *Petals* 5, inserted with the sepals, free or united with the stamens into a tube, often narrow, 2-fid or 2-lobed. *Disc* often of 5 free glands opposite the petals, sometimes connate into an entire or lobed cup. *Stamens* 5, alternating with the petals, free or united; anthers 2-theous, opening lengthwise, with the connective often dorsally thickened. *Ovary* superior or inferior, 2—3-chambered, very rarely 4-chambered, with 2 pendulous ovules in each chamber, often pubescent or villous; style mostly simple, 2—3-fid, rarely 4-fid, at the apex. *Fruit* a drupe, with usually only 1 seed developed. *Seed* pendulous; embryo large, straight; endosperm none.

Trees or shrubs, sometimes acaulescent; leaves alternate, simple, petioled, entire; stipules present; inflorescence a corymbose cyme or sometimes a dense quasi-head.

Genera 3, with over 300 species, natives of Asia, Africa, Madagascar, and America.

NOTE.—Hutchinson, *Families of Flowering Plants*, p. 206, retains the family *Chailletiaceae*.—E. P. P.

4283 **DICHAPETALUM** Thouars, Gen. Nov. Madag., p. 23 (1806)
(*Chailletia* DC.)

Calyx often hairy; tube very shortly campanulate; segments equal or unequal, linear. *Petals* 5, free, inserted on the calyx-tube, as long as the calyx, linear, sometimes clawed, emarginate or deeply 2-fid. *Disc* of 5 free glands, opposite the petals or connate into a disc. *Stamens* 5; filaments terete, slender or thick; anthers 2-theous, with the thecae somewhat separated. *Ovary* superior, 2—3-chambered, very rarely 4-chambered; styles 1—3, free or connate or styles simple and 2—3- (rarely 4-) lobed, stigmatose at the apex. *Fruit* a leathery drupe. *Cotyledons* thick, fleshy.

Small trees or shrubs or acaulescent with underground stems; leaves broadly elliptic or lanceolate; stipules 2, caducous; inflorescence an axillary cyme or corymb; flowers pubescent or tomentose.

Species close on 200, found in tropical countries, especially Africa; 1 species occurs in the Transvaal.

98. EUPHORBIACEAE

Plants monoecious or dioecious. *Perianth* occasionally absent from one or both sexes, usually small, often dissimilar in the two sexes, or sepals present and petals absent; petals when present rarely united. *Male flowers*:—*Stamens* definite to indefinite (1—1,000), hypogynous, very rarely perigynous; filaments free or connate; anthers usually 2-theous, rarely 3—4-theous, opening lengthwise, rarely by pores; thecae sometimes separate. *Pistil* rudimentary or absent. *Female flowers*:—*Ovary* superior, usually 3-, frequently 2- or 4-, very rarely 1- or more than 4-chambered, with 1—2 pendulous inverted ovules in each chamber, glabrous, various hairy, scaly or glandular; styles usually as many as the carpels, free or more or less connate, entire, 2-lobed, or variously cut. *Disc* annular, entire or lobed, of free scales or 0. *Fruit* usually capsular and 3-locular, breaking up into 2-valved cocci separating from a persistent axis or indehiscent and drupaceous, or of a single nut or 2—3 connate nuts. *Seeds* with or without an aril or caruncle; endosperm usually copious.

Herbs, shrubs, or trees, often with milky juice, sometimes stem and branches and leaves fleshy or succulent; leaves alternate, rarely opposite, or in whorls of 4's, simple, rarely compound, entire or variously lobed or toothed, sometimes rudimentary; stipules present or 0; inflorescence various.

Genera over 250; species between 4,000 and 5,000, mostly natives of the tropics of both hemispheres.

- | | |
|---|----------------------------------|
| 1. Ovules 2 in each ovary chamber | 2 |
| Ovules solitary in each ovary chamber | 14 |
| 2. Leaves opposite or in whorls of 4's | 3 |
| Leaves alternate | 4 |
| 3. Leaves in whorls of 4's | 10. <i>Toxicodendrum</i> Thunb. |
| Leaves opposite | 12. <i>Androstachys</i> Prain |
| 4. Anthers with a conspicuous gland on the back; capsule with 2 broad wings | 8. <i>Hymenocardia</i> Wall. |
| Anthers without a conspicuous gland; capsule not broadly winged | 5 |
| 5. Disc and rudimentary pistil absent in the male flowers; sepals 3 | 3. <i>Heywoodia</i> Sim |
| Disc always present; rudimentary pistil in male flowers present or absent; calyx of 4—6 sepals, very rarely sepals 3, but then ovary 1—2-chambered | 6 |
| 6. Disc of female flowers villous | 2. <i>Lachnostylis</i> Turcz. |
| Disc of female flowers glabrous | 7 |
| 7. Ovary hairy | 8 |
| Ovary glabrous | 9 |
| 8. Stamens 4—25; filaments free; disc in female flower annular or cup-shaped; ovary tomentose or hirsute | 7. <i>Drypetes</i> Vahl |
| Stamens 5, rarely 7; filaments partly connate, disc in female flower closely embracing the base of the ovary; ovary densely villous | 4. <i>Pseudolachnostylis</i> Pax |
| 9. Petals present | 10 |
| Petals absent | 11 |
| 10. Disc in the female flower single, cup-like | 1. <i>Andrachne</i> Linn. |
| Disc in the female flower double; the inner cup-like and surrounding the ovary | 11. <i>Bridelia</i> Willd. |
| 11. Rudimentary pistil absent in the male flowers | 12 |
| Rudimentary pistil present in the male flowers | 13 |
| 12. Leaves small, entire | 6. <i>Phyllanthus</i> Linn. |
| Leaves large, toothed | 7. <i>Drypetes</i> Vahl |
| 13. Fertile ovary 1- (rarely 2-) chambered; inflorescence a raceme or spike | 9. <i>Antidesma</i> Linn. |
| Fertile ovary 3-chambered; flowers in axillary fascicles | 5. <i>Fluggea</i> Willd. |
| 14. Apparent flower consisting of a number of stamens (really male flowers), with or without an ovary (really a female flower) and surrounded by an involucre; the whole resembling a small male or bisexual flower | 15 |
| Flowers normal; plants monoecious or dioecious | 18 |
| 15. Fruit fleshy, indehiscent, enclosing a hard bony 3-locular stone | 34. <i>Elaeophorbia</i> Stapf |
| Fruit a capsule... .. | 16 |

16. Involucre with 2—8 distinct glands... 33. *Euphorbia* Linn.
 Involucre with a single continuous rim-like erect or spreading entire or rarely 4-crenate gland 17
17. Perennials with thick cylindric fleshy stems and branches
 36. *Monadenium* Pax
 Branching shrubs or small trees ... 35. *Synadenium* Boiss.
18. Leaves digitately compound with 5—7 leaflets
 29. *Ricinodendron* Müll.-Arg.
 Leaves simple, entire or variously lobed 19
19. Ovary stellately hairy, scaly, or covered with resinous glands 20
 Ovary glabrous or hairy, but not with stellate hairs 24
20. Leaves digitately compound... 29. *Ricinodendron* Müll.-Arg.
 Leaves not digitately compound 21
21. Calyx in female flowers accrescent in fruit, pinnatifid; rudimentary pistil present 27. *Cephalocroton* Hochst.
 Calyx in female flowers not accrescent in fruit or pinnatifid; rudimentary pistil absent 22
22. Disc absent in male and female flowers 20. *Macaranga* Thouars
 Disc present in male and female flowers 23
23. Styles covered with papillae... 14. *Chrozophora* Neck.
 Styles without papillae ... 13. *Croton* Linn.
24. Rudimentary pistil present in the male flowers
 28. *Clutia* Linn.
 Rudimentary pistil absent in the male flowers, very rarely present and minute 25
25. Leaves opposite 16. *Adenocline* Turcz.
 Leaves alternate or at the branching nodes nearly opposite 26
26. Disc present, at least in the female flowers 27
 Disc absent, very rarely present, but then obscure 30
27. Petals 5, at least in male flowers ... 26. *Jatropha* Linn.
 Petals absent 28
28. Disc in female flowers of 3 separate scales 29
 Disc in female flowers with a membranous margin
 30. *Suregada* Rottl.
29. Calyx 3—4-lobed; disc absent in the male flower
 15. *Micrococca* Benth.
 Calyx 5-lobed; disc present in the male flower
 16. *Adenocline* Turcz.
30. Inflorescence surrounded by 2 showy bracts; a twining or climbing undershrub... .. 25. *Dalechampia* Linn.
 Inflorescence not surrounded by showy bracts 31
31. Calyx-lobes at least in female flowers palmately or pinnately lobed ... 32
 Calyx-lobes not lobed 33
32. Stamens normally 3 22. *Tragia* Linn.
 Stamens many 23. *Ctenomeria* Harv.

33. Styles much longer than the ovary, far exserted and very apparent
 21. *Acalypha* Linn.
 Styles not far exserted and apparent 34
34. Ovary hairy or with a few setae 35
 Ovary glabrous or covered with resinous glands 37
35. Styles connate into a hollow cylindric or subglobose fleshy column,
 crowned by the free stigmatic lobes. 24. *Plukenetia* Linn.
 Styles free or more or less connate but not forming a distinct column... 36
36. Calyx in the female flower reduced to a single narrow bract
 17. *Leidesia* Müll.-Arg.
 Calyx in the female flower 3—6-partite 21. *Acalypha* Linn.
37. Stamens 15—30 15. *Micrococca* Benth.
 Stamens 2—8 38
38. Herbaceous plants 39
 Shrubs or trees 40
39. Ovary 2-chambered 18. *Seidelia* Baill.
 Ovary 3-chambered 21. *Acalypha* Linn.
40. Filaments and styles connate 31. *Spirostachys* Sond.
 Filaments free; styles sometimes connate 41
41. Leaves with a single midrib 32. *Sapium* P. Br.
 Leaves 3—7-nerved from the base 42
42. Bracts subtending the female flowers becoming foliaceous in fruit
 21. *Acalypha* Linn.
 Bracts not becoming foliaceous in fruit 20. *Macranga* Thouars

4286 1. ANDRACHNE Linn., Sp. Pl., ed. 1, p. 1014 (1753)

Plants monoecious. *Petals* present. *Male flowers*:—*Sepals* 5—6, more or less oblong. *Petals* membranous, subequalling the sepals, obovate. *Disc* saucer-shaped, crenulate. *Stamens* 5—6, free or subconnate at the base; anthers subglobose. *Pistil* rudimentary, 3-partite. *Female flowers*:—*Sepals* and *petals* as in male. *Disc* saucer-shaped, crenulate. *Ovary* 3-chambered, with 2 ovules in each chamber; styles bifid or bipartite. *Capsule* 3-lobed. *Seeds* brown, somewhat wrinkled, more or less 3-angled; endosperm fleshy; embryo curved.

Diffuse herbs, undershrubs, or shrubs; leaves alternate, petioled, elliptic, ovate; stipules present or absent; male flowers often fasciculate; female flowers solitary.

Species about 50, found in the warmer parts of the northern hemisphere; 1 species occurs in South Africa and extends from the northern Transvaal and Natal, through the eastern districts to the George and Knysna districts. (Type: *A. telephioides* Linn.)

4291 2. LACHNOSTYLIS Turcz., Bull. Soc. Nat. Moscou, vol. 19, pt. 2, p. 503 (1846)

Plants dioecious. *Male flowers*:—*Sepals* 5, subequal, imbricate. *Petals* 5, membranous, spatulate or obovate, sometimes slightly longer than the sepals. *Disc* annular, villous. *Stamens* 5, free or connate below and forming a short tube. *Female flowers*:—*Sepals* and *petals* as in the male. *Disc* annular, thick, villous. *Ovary* ovoid-globose, 2—3-chambered, with 2 ovules in each

chamber, tomentose without and also on the inner walls of the ovary-chambers; styles bifid. *Capsule* breaking up into 2-valved cocci. *Seeds* subglobose or hemispherical, smooth or slightly wrinkled; endosperm scanty.

Much-branched shrubs or small trees; leaves alternate, entire; stipules present; flowers fascicled in the leaf-axils, pedicelled; female flowers fewer than the male or solitary and on somewhat longer pedicels.

Endemic; species 2, found in the coastal strip from the Swellendam to the Port Elizabeth district and also on the mountains near Oudtshoorn. (Type: *L. capensis* Turcz.)

4291a **3. HEYWOODIA** Sim, For. & For. Fl. of the Colony of the Cape of Good Hope, p. 326, pl. 140, fig. 1 (1907)

Plants dioecious. *Petals* present. *Male flowers*:—*Sepals* 3, imbricate, unequal. *Petals* 5, membranous, imbricate, larger than the sepals. *Disc* shortly cupular, fleshy, with the margins irregularly undulate. *Stamens* 8—12, inserted inside the disc, 2-seriate; the outer stamens free; the inner connate at the base; anthers 2-thecous, with the thecae somewhat distinct. *Pistil* rudimentary, 3-fid. *Female flowers*:—not seen. *Capsule* subglobose, 4-locular, with the valves wrinkled. *Seed* brown, smooth, somewhat trigonous.

A large tree; leaves alternate, petioled, large, ovate, subacuminate, entire; stipules 0; male flowers in dense axillary glomerules.

Endemic; 1 species found in the Transkei and Pondoland. (Type: *H. lucens* Sim)

4295 **4. PSEUDOLACHNOSTYLIS** Pax, Engl. Bot. Jahrb., vol. 28, p. 19 (1899)

Plants dioecious. *Petals* 0. *Male flowers*:—*Sepals* 5, rarely 6, somewhat leathery, ovate. *Disc* annular, glabrous. *Stamens* 5, very rarely 7; filaments connate for the greater part of their length; anthers oblong. *Pistil* rudimentary, 2-fid. *Female flower*:—*Sepals* as in the male flower, with circumscissile dehiscence. *Disc* more or less basin-shaped, partially surrounding the ovary. *Ovary* 3-chambered, with 2 ovules in each chamber, densely villous (at least in the South African species); styles 3, slightly connate at the base, bilobed. *Capsule* globose or depressed globose. *Seed* solitary in each loculus; endosperm fleshy.

Trees or shrubs; leaves alternate, petioled, ovate-elliptic or elliptic, entire; stipules present; male inflorescence a few-flowered axillary pedunculate cyme, surrounded by membranous bracts; female flowers axillary, usually solitary.

Species 7, found in southern tropical Africa; 1 species extends into the Transvaal. (Type: *P. dekindtii* Pax)

4298 **5. FLUGGEA** Willd., Sp. Pl., vol. 4, p. 757 (1805)

Plants dioecious. *Petals* 0. *Male flowers*:—*Sepals* 5, membranous, imbricate, shortly ciliate. *Stamens* 5; filaments free, filiform, at length far exserted. *Disc* of 5 glands, hairy. *Pistil* rudimentary, deeply 2-partite. *Female flowers*:—*Sepals* as in the male. *Disc* flat, annular, entire or nearly so. *Ovary* 3-chambered, with 2 ovules in each chamber; style connate at the base or nearly absent, deeply bifid, reflexed and lying on the ovary. *Fruit* sometimes slightly fleshy, small, globose. *Seeds* sub-3-angled, rounded on the back; endosperm scanty.

Trees or shrubs, sometimes with abbreviated branchlets bearing the leaves and flowers; leaves alternate, petioled, elliptic or subrotund, entire; stipules present;

flowers in axillary fascicles; male flowers often numerous; female flowers few or solitary.

Species about 16, found in the tropics generally; 1 species occurs in South Africa, recorded from South West Africa, the Transvaal, Zululand, and Natal. (Type: *F. leucopyrus* Willd.)

4299 6. PHYLLANTHUS Linn., Sp. Pl., ed. 1, p. 981 (1753)

Plants monoecious or sometimes dioecious. *Petals* 0. *Disc* always present in the African species. *Male flowers*:—*Sepals* 4—6, membranous, free or slightly joined at the base, imbricate. *Disc* often small, of separate glands, very rarely annular. *Stamens* 2—6, in the middle of the flower; filaments free or connate, or some free and the rest connate. *Pistil* 0. *Female flowers*:—*Sepals* as in the male, but often large. *Disc* usually annular, saucer-shaped or cup-shaped, rarely of separate glands. *Ovary* usually 3-chambered, with 2 ovules in each chamber; styles 3, frequently sessile, free or partially connate, bifid or bilobed, rarely entire. *Capsule* dry or more or less fleshy, dehiscent or subdehiscent, breaking up into 2-valved cocci. *Seeds* 3-angled, convex on the back and often longitudinally sulcate or pitted; endosperm fleshy.

Herbs, shrubs, or trees, often with thin branches from a deep woody rootstock; leaves (in all the African species) alternate, sometimes small, obovate, elliptic, suborbicular, or linear, entire; stipules present; flowers axillary; male flowers mostly numerous and fascicled, usually pedicelled; female flowers mostly solitary, sometimes few.

Described species about 835, spread throughout the tropical regions of both hemispheres; 21 species found in South Africa with a wide distribution. (Type: *P. niruri* Linn.)

4309 7. DRYPETES Vahl, Eclog. Amer., vol. 3, p. 49 (1807)

Plants dioecious, rarely monoecious. *Petals* 0. *Sepals* 4—5, somewhat leathery, deeply concave, imbricate, sometimes tomentose or hirsute. *Stamens* 3 to many (in the South African species 4, 15, 20—25); filaments free; anthers sometimes large, ovate. *Disc* concave, rarely cup-like. *Pistil* 0 or rarely represented by a small conical projection in the middle of the disc. *Female flowers*:—*Calyx* as in the male. *Disc* annular, cup-shaped or saucer-shaped, sometimes thick and fleshy with papillae on the inner surface and irregularly lobed on the margin. *Ovary* 1—4-chambered, sometimes thick-walled and warted, with 2 ovules in each chamber, tomentose or hirsute, more rarely glabrous; styles short or 0; stigmas thick, flattened, bifid or entire. *Fruit* globose, ellipsoid, or ovoid, sometimes large, indehiscent. *Seed* solitary by abortion; endosperm fleshy.

Trees or shrubs; leaves alternate, petioled, often large, lanceolate, elliptic, sometimes acuminate, entire or toothed; stipules caducous, rarely persistent; flowers fascicled in the axils of the leaves or produced on the older branches of the stem, usually pedicelled.

Species about 156, found chiefly in the tropics of the Old World, a few in the West Indies and South America; 3 species in South Africa, found in the Transvaal, Swaziland, Zululand, Natal, Pondoland, and the Transkei. (Type: *D. glauca* Vahl)

4325 8. HYMENOCARDIA Wall., Numer. List, n. 3549 (1831)

Plants dioecious. *Petals* 0. *Disc* 0. *Calyx* 4—5- (rarely 6-) lobed. *Stamens* usually 5, rarely 4; filaments free or connate at the base; anthers usually with a conspicuous yellow or golden-coloured gland on the back. *Pistil* rudimentary, terete, more or less club-shaped in the South African species. *Female flowers*:—*Sepals* distinct, caducous. *Ovary* 2-chambered, with 2 ovules in each chamber; style 2, free from the base, often long-linear.

Capsule flat with 2 large apical wings or broadly winged on the margin, splitting into 2 cocci from a central axis. *Seed* usually solitary in each coccus, often half-moon-shaped; testa sometimes reddish, smooth or ribbed; embryo straight; cotyledons papery; endosperm copious or scanty.

Trees or shrubs; leaves alternate, petioled, lanceolate, elliptic, sometimes acuminate, entire; male inflorescence a catkin-like spike; female inflorescence a short raceme.

Species 20, all African except two, found in India and Indo-China; 1 species in South Africa, recorded from Zululand. (Type: *H. wallichii* Tul.)

4327 9. ANTIDESMA Linn., Sp. Pl., ed. 1, p. 1027 (1753)

Plants dioecious. *Petals* 0. *Male flowers*:—*Calyx* membranous, small, 3—5-lobed or -partite; segments imbricate. *Disc* subentire or consisting of distinct glands. *Stamens* 2—5. *Pistil* small, rudimentary. *Female flowers*:—*Calyx* as in the male. *Disc* annular, surrounding the base of the ovary. *Ovary* 1- (very rarely 2-) chambered, with 2 ovules in each chamber; styles 3, usually 2-lobed. *Fruit* a drupe. *Seed* solitary by abortion, rarely seeds 2; endosperm fleshy.

Trees or shrubs; leaves alternate, large, elliptic, entire; stipules present; inflorescence a raceme or spike, more rarely a subpanicle, sometimes male flowers in a spike and female flowers in a panicle; bracts small, usually ciliate.

Species about 245, distributed throughout the warmer regions of the Old World; 1 species in South Africa recorded from Bechuanaland, the Transvaal, Zululand, Natal, and extends to Pondoland. (Type: *A. alexiteria* Linn.)

4336 10. HYAENANCHE Lamb., Desc. Cinch., p. 52, t. 10 (1797)

(*Toxicodendrum* Thunb.)

Plants dioecious. *Petals* 0. *Disc* 0. *Male flowers*:—*Sepals* 5—6, rounded, much shorter than the stamens. *Stamens* indefinite; anthers large. *Female flowers*:—*Sepals* 6, in 2 series; the outer sepals smaller than the inner. *Ovary* ovoid, 3—4-chambered, with 2 pendulous ovules in each chamber, tomentulose; styles 3—5, connate in the lower half. *Capsule* subglobose, usually 4-locular, 8-lobed, with a crustaceous exocarp and a bony endocarp, dehiscing into 2-valved cocci. *Seeds* black and shining; endosperm fleshy.

A small tree or shrub; leaves leathery, in whorls of 4, lanceolate, entire; male inflorescence axillary, densely cymulose, much shorter than the leaves; female flowers sessile, 1—3 between each leaf axil.

Endemic; species 1, recorded from the Clanwilliam and Van Rhynsdorp districts. (Type: *H. globosa* Lamb.=*T. globosum* (Gaertn. f.) Pax & K. Hoffm.=*T. capense* Thunb.)

4345 11. BRIDELIA Willd., Sp. Pl., vol. 4, p. 978 (1805)

Plants monoecious, rarely dioecious. *Petals* present. *Male flowers*:—*Sepals* 5, usually small and scale-like, sometimes subleathery and ovate. *Petals* 5, obovate, shorter than the sepals. *Disc* entire or sinuately lobed. *Stamens* 5; filaments connate. *Pistil* rudimentary, at the apex of the staminal-column. *Female flowers*:—*Sepals* often narrower than those of the male. *Disc* double; the outer annular; the inner often cup-like and surrounding the base of the ovary, sometimes of separate scales. *Ovary* 2- (rarely 3-) chambered, with 2 ovules in each chamber; styles distinct or shortly connate at the base, bilobed or subentire. *Fruit* a capsule, separating into 2 portions, drupe-like or berry-like. *Seed* often solitary in each portion; testa often reddish; endosperm usually fleshy.

Shrubs or small trees; leaves alternate, petioled, obovate or lanceolate, sometimes large, entire; stipules present; flowers in axillary glomerules, rarely in spicate clusters; the male numerous and subsessile; the female fewer or solitary, sometimes distinctly pedicelled; bracts small and scaly.

Species about 44, found in tropical Asia, extending through the Malay Archipelago to New Caledonia and Australia; a few species in Madagascar, several species in tropical Africa; 6 species in South Africa, found in the Transvaal, Natal, and Pondoland.

4345a 12. ANDROSTACHYS Prain, Kew Bull., p. 438 (1908)

Plants dioecious. *Petals* 0. *Disc* 0. *Male flowers*:—*Calyx* of 2–5 bract-like free spirally arranged sepals, long-ciliate. *Stamens* many, spirally arranged on a prolonged axis; lowest filaments short and recurved; the upper subsessile; anthers with the thecae slightly divided at the apex, with a few long hairs at the apex. *Pistil* 0. *Female flowers*:—*Calyx* 5-partite; segments ovate, acuminate, imbricate. *Ovary* 3–4-chambered, with 2 ovules in each chamber, densely tomentose; style connate into a pilose column; stigmas 3, spreading, large, linear-lanceolate. *Capsule* breaking up into three or four. 2-valved cocci. *Seeds* compressed; endosperm fleshy.

A tall tree; branchlets more or less adpressed silky pilose, angled, articulated; leaves decussate, petioled, ovate or suborbicular, usually subcordate at the base, densely silky beneath; stipules large, connate, forming a sheath enclosing the flowers and young leaves, deciduous; flowers axillary; male flowers 3-nate; female flowers solitary; pedicels of the male flowers more or less connate with the lateral pedicels rather shorter than the central.

Species 1, found in the Transvaal, Swaziland, and Portuguese East Africa. (Type: *A. subpeltata* (Sim) Phillips = *A. johnsonii* Prain)

4348 13. CROTON Linn., Sp. Pl., ed. 1, p. 1004 (1753)

Plants monoecious, rarely dioecious. *Male flowers*:—*Calyx* deeply divided, sometimes sepals free; segments 5, rarely 4 or 6, frequently densely stellately hairy or glandular. *Petals* usually present, equalling or shorter than the sepals. *Disc* of free scales or scales adnate to the base of the sepals, not always very evident. *Stamens* 5 to many, inserted on a usually pilose receptacle; filaments free. *Pistil* 0. *Female flowers*:—*Calyx* usually rather smaller than in the male, somewhat accrescent in fruit. *Petals*, when present, rarely as large as those of the male, often obsolete or reduced and replaced by a tuft of hairs, occasionally absent. *Disc* as in the male or sometimes annular. *Ovary* usually 3-chambered, occasionally 2–4-chambered, with a single ovule in each chamber, in the South African species covered with stellate hairs or densely scaly; style usually recurved, 1–3 times 2-fid or -partite, rarely multifid. *Capsule* often globose, normally 3-locular, breaking up into 2-valved cocci, rarely subindehiscent. *Seeds* smooth, often with a woody testa; endosperm copious fleshy.

Trees or shrubs, rarely herbs, of various habit, usually with stellate hairs or orbicular scales; leaves usually alternate, rarely opposite or whorled, often ovate or lanceolate, sometimes acuminate, entire or toothed, rarely lobed, usually with 2 glands at the apex of the petiole; inflorescence a spike or raceme; in the monoecious species usually with many males above and a few basal females, occasionally with both sexes mixed.

Species about 700, spread throughout the tropics of both hemispheres, with a few species extending or confined to subtropical regions; 8 species found in South Africa, extending from the Transvaal and Natal to the Uitenhage and Humansdorp districts; also found in Griqualand West, Bechuanaland, and South West Africa. (Type: *C. tiglium* Linn.)

4355 14. CHROZOPHORA Neck., Elem., vol. 2, p. 337 (1790)

Plants monoecious. *Male flowers*:—*Calyx* 5-partite, densely stellately hairy; lobes ovate. *Petals* 5, membranous, equalling or shorter than the sepals. *Disc* inconspicuous, of 5 glands or connate into a ring. *Stamens* 5—15, more or less in 1—3 series; filaments connate into a minutely pubescent tube; anthers of outer series subsessile. *Pistil* 0. *Female flowers*:—*Calyx* segments narrow-linear. *Petals* narrow, sometimes small or setaceous, or 0. *Disc* glandular, alternating with the petals or disc somewhat tumid. *Ovary* 3-chambered, with a single ovule in each chamber, stellately hairy; styles 2-fid, covered with distinct papillae. *Capsule* somewhat fleshy, splitting into 3 cocci, stellately hairy. *Seed* subglobose, with a woody testa, sometimes rough; endosperm fleshy, copious; embryo straight; cotyledons subquadrate.

Branching herbs, often spreading, covered with stellate hairs or hispid; leaves alternate, petioled, ovate, often with undulate margins; stipules small, setaceous; inflorescence a short dense sessile axillary raceme.

Species 11, found in Africa, Asia, east India and southern Europe; 1 species recorded from the Transvaal. (Type: *C. tinctoria* (L.) Juss.)

4367 15. MICROCOCCA Benth. emend, Hook. Niger Fl., p. 506 (1849)

(*Erythrococca* Benth.)

Plants dioecious or monoecious. *Petals* 0. *Male flowers*:—*Calyx* splitting into 3—4-valvate lobes. *Disc* 0. *Stamens* 2—60, usually intermixed with small glands and sometimes surrounded by a ring of similar free or connate glands; filaments free; anther-thecae free from the base or almost from the base. *Pistil* 0. *Female flower*:—*Calyx* 2—4-partite; lobes imbricate. *Disc* of linear or flattened scales, alternating with the carpels, rarely saucer-shaped. *Ovary* 2—3-chambered, rarely 4-chambered, with a solitary ovule in each chamber; styles 3, rarely 4, free or connate below, sometimes reflexed and lying on the ovary, plumose-laciniate. *Capsule* breaking up into 2-valved cocci or by abortion 1-coccus. *Seed* globose or subglobose, with a thin aril; endosperm fleshy (or endosperm 0?).

Shrubs or herbs; leaves alternate, often large, lanceolate or elliptic, often serrate, sometimes undulate, often acuminate; stipules small, sometimes modified into weak spines; inflorescence a raceme or spike; male flowers glomerulate and distant on the spike, occasionally with a central female flower, sometimes long-pedicelled; female flower usually solitary.

Species 23, mostly tropical African; also found in Asia and Madagascar; 4 species in South Africa found in Natal and Pondoland. (Type: *M. mercurialis* (L.) Bth.)

4370 16. ADENOCLINE Turcz., Bull. Soc. Nat. Moscou, vol. 16, p. 59 (1843)

Plants dioecious, rarely monoecious. *Petals* 0. *Male flowers*:—*Calyx* deeply 5-lobed; lobes herbaceous, lanceolate, imbricate. *Disc* swollen, glandular, surrounded by the stamens. *Stamens* usually 10 or 6—12; filaments free; anther-thecae more or less separate, usually widely divergent on dehiscence. *Female flowers*:—*Calyx* deeply 5-lobed; lobes as long as or longer than the ovary, lanceolate, imbricate. *Disc* of 3 spatulate or broad glands. *Ovary* 3-chambered, with a solitary ovule in each chamber; styles 2-partite, slightly united at the base. *Capsule* 3-lobed, somewhat globose, breaking up into 2-valved cocci. *Seed* globose or ovoid; testa crustaceous; endosperm fleshy.

Slender erect or diffuse herbs; leaves alternate, very rarely opposite, ovate or linear, the lower leaves sometimes differing in shape to the upper leaves, sometimes acuminate and subcordate at the base, usually toothed; flowers in axillary cymes, with the cymules often passing into a terminal raceme or panicle; male flowers usually several; female flowers few or solitary, usually forming uniparous cymes, their pedicels abruptly reflexed.

Endemic; species 8, extending from the northern Transvaal, Natal, and the coastal belt to the Clanwilliam district; also recorded from the Graaff-Reinet, Willowmore, and Queenstown districts and from South West Africa.

4372 17. LEIDESIA Muell.-Arg., DC. Prodr., vol. 15, p. 792 (1866)

Plants monoecious. *Petals* 0. *Male flowers*:—*Calyx* membranous, splitting into 3 valvate lobes; lobes with a few setae. *Disc* 0. *Stamens* 3—7; filaments free or sometimes connate below. *Pistil* 0. *Female flowers*:—*Calyx* reduced to a single short narrow bract or obsolete. *Disc* 0. *Ovary* 2-chambered with a solitary ovule in each chamber, usually with a few setae; styles 2, free, entire. *Capsule* 2-didymous or occasionally by abortion 1-locular, globose, hispidulous or with a few setae. *Seed* subglobose; testa sculptured; endosperm fleshy.

Delicate annual branching herbs; leaves petioled, alternate or nearly opposite at the branching nodes, ovate, lanceolate, or orbicular, usually slightly crenate and with scattered setae on the margins; male flowers minute, in fascicles and arranged in racemes; female flowers few towards the base of the rhachis, subtended by a leafy bract.

Endemic; species 3, extending from the Transvaal and Natal, through the coastal belt to the south-western districts of the Cape Province; also found in the Willowmore and Somerset East districts and in South West Africa.

4373 18. SEIDELIA Baill., Étud. Gén. Euphorb., p. 465, t. 9, fig. 7 (1858)

Plants monoecious. *Petals* 0. *Male flowers*:—*Calyx* membranous, splitting into 3 valvate lobes. *Disc* 0. *Stamens* usually 3, less often 2; filaments connate below; anther-thecae somewhat separate and deeply grooved. *Pistil* 0. *Female flowers*:—*Calyx* as in male. *Disc* 0. *Ovary* 2-chambered, with a solitary ovule in each chamber; styles 2, short, undivided. *Capsule* 2-didymous; cocci 2-valved. *Seeds* ovoid; testa crustaceous, sculptured; endosperm copious.

Small annual glabrous herbs; leaves alternate, linear-lanceolate or obovate, entire or with slightly crenulate margins or few toothed; flowers small, in glomules or cymules at the ends of the branches or in the upper leaf-axils, shortly pedicelled; the upper densely clustered and male; those below female.

Endemic; species 2, recorded from the Uitenhage, Richmond, Hanover, Kimberley and Kuruman districts in the Cape Province and from the Fauresmith district in the Orange Free State. (Type: *S. mercurialis* Baill.)

4388 19. ALCHORNEA Sw., Prodr. Veg. Ind. occ., p. 98 (1788)

Plants dioecious, rarely monoecious. *Petals* 0. *Male flowers*:—*Calyx* splitting into 4, rarely 3 or 2, valvate lobes. *Disc* usually 0. *Stamens* 8 or fewer; filaments free or nearly so. *Pistil* 0. *Female flowers*:—*Calyx* 3—6- (usually 4-) lobed; lobes imbricate. *Ovary* 2—3-chambered, with a single ovule in each chamber, glabrous or softly pubescent; styles free, usually entire. *Capsule* 2—3-coccus; cocci 2-valved. *Seeds* subglobose; endosperm fleshy.

Trees or shrubs; leaves alternate, shortly petioled, sometimes oblong or oblanceolate-oblong and shortly acuminate, entire, toothed, or crenulate, often 3-nerved at the base, frequently glandular beneath between the nerves at the base;

male inflorescence an axillary or lateral simple or branched spike, several to a bract; female inflorescence an axillary spike or raceme, solitary to a bract; bracts usually small, sometimes long-linear.

Species 93, widely spread throughout the tropics; 1 species recorded from Zululand (Type: *A. latifolia* Sw.)

4400 **20. MACARANGA** Thouars, Gen. Nov. Madagascar, p. 26 (1806)

Plants dioecious, rarely monoecious. *Petals* 0. *Male flowers*:—*Calyx* splitting into 3—4-valvate lobes. *Disc* 0. *Stamens* 2—3 or few, occasionally solitary; filaments short, usually free; anthers usually 4-theous and 4-valved or 2-theous and 2-valved. *Pistil* 0. *Female flowers*:—*Calyx* truncate or toothed, ultimately wide-cupular or obliquely spathaceous, rarely splitting into 2—3 lobes. *Ovary* 2—3- (rarely 4-) chambered, sometimes 1-chambered, with a single ovule in each chamber, sometimes glandular; styles free or shortly connate at the base, entire, sometimes style 1 and ligulate. *Capsule* 2- to several-coccus, rarely 1-coccus; cocci 2-valved, sometimes glandular. *Seed* globose; endosperm fleshy.

Trees or shrubs; leaves often large, alternate, petioled, simple, ovate or elliptic, often acuminate, sometimes subcordate, usually 3—7-nerved from the base, entire, lobed or toothed; inflorescence a raceme or spike, lateral or forming a terminal thyrsoid panicle; male flowers glomerulate, several to a bract; female flowers solitary to each bract; bracts entire, toothed, or fimbriate.

Species about 230, spread throughout the tropics of the Old World; 1 species found in Zululand, Natal, and Pondoland.

4407 **21. ACALYPHA** Linn., Sp. Pl., ed. 1, p. 1003 (1753)

Plants monoecious, rarely dioecious. *Petals* 0. *Male flowers*:—*Calyx* membranous or herbaceous, splitting into 4 valvate lobes. *Disc* 0. *Stamens* few, usually 8, attached to a slightly raised receptacle; filaments free; anther-thecae separate. *Pistil* 0. *Female flowers*:—*Calyx* membranous, 3—4-lobed or lobes almost free, imbricate, shorter than the ovary. *Disc* 0. *Ovary* 3-chambered, with a single ovule in each chamber, hairy, papillose, glandular, or more rarely almost glabrous; style exserted and very apparent, free or connate below, lacinate or denticulate, very rarely entire or merely 2-lobed. *Capsule* 3-locular, 3-lobed. *Seeds* ellipsoid or subglobose; testa crustaceous; endosperm fleshy or floury.

Herbs, shrubs, or trees, rarely prostrate, sometimes with branches from a woody rootstock; leaves alternate, petioled, lanceolate, lanceolate-linear, elliptic or ovate, often acuminate, sometimes cordate at the base, usually crenate or toothed, 3—7-nerved from the base, glabrous or hairy; inflorescence various, axillary or terminal or both, unisexual or bisexual; the bisexual inflorescences usually basal, rarely apical, solitary or 3-nate and subtended by a conspicuous bract which is entire or variously cut; in unisexual inflorescences the male flowers in axillary often long peduncled spikes below the female, more usually in a close-set terminal spike, rarely in a loose panicle; occasionally terminal female spikes and axillary male spikes occur on separate plants or on distinct branches of the same plant.

Species about 576, spread throughout the warmer regions of both hemispheres; 22 species found in South Africa, extending from the Transvaal and Natal, through the coastal belt to Namaqualand and South West Africa; also recorded from Bechuanaland. (Type: *A. virginica* Linn.)

4416 **22. TRAGIA** Linn., Sp. Pl., ed. 1, p. 980 (1753)

Plants monoecious, rarely dioecious. *Petals* 0. *Male flowers*:—*Calyx* splitting into 3, rarely 4—6, valvate lobes. *Disc* 0 or obscure. *Stamens* normally 3, very rarely fewer or more; filaments free; anther-thecae not diverging.

Pistil rudimentary, minute or obsolete. *Female flowers*:—*Calyx* 6-partite; lobes sometimes somewhat fleshy, more or less 2-seriately imbricate, palmately lobed, occasionally lobes 4—5, usually enlarged and hardened in fruit. *Ovary* 3-lobed, 3-chambered, setose or hispid in the South African species, with a single ovule in each chamber; styles 3, free or more or less connate at the base, entire. *Capsule* 3-didymous, glandular and with scattered setae, breaking up into three 2-valved cocci. *Seeds* globose, with circular markings or depressions surrounded by short glandular hairs; endosperm fleshy.

Twining or suberect herbs, sometimes stems from a woody rootstock, usually copiously beset with stinging hairs on the stem, leaves, and calyx; leaves alternate, sessile or petioled, oblong, ovate, or lanceolate, sometimes subacuminate, often subcordate or hastate at the base, lobed or toothed, more rarely entire; stipules present; inflorescence a raceme, terminal or opposite a leaf, with many male flowers above and usually a few basal female flowers; bracts small, persistent.

Species about 178, spread through the warmer regions of both hemispheres; 17 species in South Africa, extending from the Transvaal, Swaziland, and Natal to the East London district; also recorded from Bechuanaland and South West Africa. (Type: *T. volubilis* Linn.)

NOTE.—L. Croizat in *Journ. Arnold Arboretum*, vol. 22, p. 430 (1941), places *Tragia natalensis* Sond. in the genus *Sphaerostylis* Baill. and makes the new combination *Sphaerostylis natalensis* (Sond.) Croiz.—E. P. P.

4416a 23. CTENOMERIA Harv., Hook. Lond. Journ. Bot., vol. 1, p. 29 (1842)

Plants monoecious. *Petals* 0. *Male flowers*:—*Calyx* herbaceous, 5-lobed; lobes valvate. *Disc* 0. *Stamens* 30—60 on a hemispherical receptacle; filaments free; anthers linear, minutely apiculate. *Pistil* 0. *Female flowers*:—*Calyx* 6-partite; segments pectinately lobulate on each side, setose. *Disc* 0. *Ovary* 3-chambered, with a single ovule in each chamber, setose; styles 3, free or connate, densely papillose throughout. *Capsule* 3-coccus; cocci 2-valved. *Seeds* globose; endosperm fleshy.

Twining herbs; leaves alternate, petioled, ovate, acuminate, cordate at the base, lobed, rarely subentire; inflorescence a raceme, terminal or leaf-opposed, with numerous male flowers above and 1—2 basal female flowers.

Endemic; species 2, extending from the northern Transvaal, Zululand, and Natal to the George and Knysna districts. (Type: *C. cordata* Harv.)

4421 24. PLUKENETIA Linn., Sp. Pl., ed. 1, p. 1192 (1753)

Plants monoecious. *Petals* 0. *Male flowers*:—*Calyx* 4—5-lobed; lobes valvate. *Disc* 0. *Stamens* 8—20; filaments free, sometimes inserted on a fleshy receptacle. *Pistil* rudimentary or usually 0. *Female flower*:—*Calyx* 4—5-lobed; lobes imbricate. *Disc* 0. *Ovary* normally 4-chambered, with a single ovule in each chamber, sometimes pilose; styles connate into a hollow cylindric or subglobose fleshy column crowned by the free stigmatic lobes. *Capsule* usually 4-didymous, breaking up into 2-valved cocci; cocci dorsally winged. *Seed* globose or compressed, sometimes winged; endosperm fleshy.

Slender twining, rarely erect or procumbent herbs or undershrubs, rarely shrubs; leaves alternate, petioled, entire or toothed, 3—5-nerved, from the base; inflorescence a leaf-opposed or axillary raceme, with the male flowers more or less glomerulate above and the female solitary towards the base of the raceme, sometimes absent.

Species about 20 found in most hot countries; 2 species found in the Transvaal and Bechuanaland. (Type: *P. volubilis* Linn.)

4422 25. DALECHAMPIA Linn., Sp. Pl., ed. 1, p. 1054 (1753)

Plants monoecious; the male and female flowers together enveloped by two showy bracts. *Petals* 0. *Male flowers* few together, surrounded by a basin-shaped involucre. *Calyx* splitting into 4—6 valvate lobes. *Disc* 0. *Stamens* usually 20—30, rarely more or fewer, filaments united into a short or long column. *Pistil* 0. *Female flowers* few together, surrounded by an involucre. *Calyx* usually 6-partite, rarely more than 6-partite; segments often linear, often pinnatifid or fimbriate, less often entire, often coriaceous and accrescent in fruit. *Petals* 0. *Ovary* 3- (rarely 4-) chambered, with a single ovule in each chamber, usually hairy; style simple, terete, often thickening upwards, hollow at the apex. *Capsule* 3-didymous, rarely 4-didymous, somewhat woody, breaking up into 2-valved cocci, often slightly hairy. *Seed* globose or ellipsoid, with several slightly raised marking (resembling a fern frond) from the base, with an apical cap; endosperm fleshy.

Twining or climbing undershrubs, sometimes from a woody rootstock; leaves alternate, petioled, 3—5-lobed or -partite, or entire; inflorescence surrounded by 2 large veined and usually brightly coloured simple or lobed bracts.

Species 139, spread through the warmer regions of both hemispheres, but most numerous in America; 6 species in South Africa extending from the Transvaal and Natal, through the coastal belt to the Humansdorp district. (Type: *D. scandens* Linn.)

4433 26. JATROPHA Linn., Sp. Pl., ed. 1, p. 1006 (1753)

Plants monoecious, rarely dioecious. *Male flowers*:—*Sepals* 5, imbricate, often shortly connate below, often with stalked glands on the margins. *Petals* 5, usually longer than the sepals, free or connate below into a tube, rarely obsolete. *Disc* of 5 free glands, sometimes annular. *Stamens* usually 8, in 2 series; filaments connate below. *Pistil* 0. *Female flower*:—*Sepals* as in the male. *Petals* as in the male. *Disc* of 5 free glands, sometimes annular. *Ovary* glabrous, hirsute, or setose, 2—3- (rarely 4—5-) chambered, with a single ovule in each chamber; styles free or connate below, often shortly 2-partite; stigmas laminated. *Capsule* ovoid or subglobose, breaking up into 2-valved cocci, glabrous or hairy. *Seeds* carunculate; caruncle often deeply lobed; testa crustaceous; endosperm fleshy.

Herbs, often with a large thick perennial rootstock, or shrubs; leaves alternate, petioled or sessile, variously shaped, often lanceolate or elliptic, entire, or digitately lobed, rarely pinnately lobed, sometimes cordate or hastate at the base, with the margins often toothed or with stalked glands, glabrous or hairy; stipules setaceous lobed or partite, rarely rigid and spiny; inflorescence a terminal dichotomous cyme; female flowers solitary, terminal; male flowers lateral.

Species about 262, distributed throughout the tropics and extending into North America; 11 species in South Africa, extending from the Transvaal and Natal to the Uitenhage and Humansdorp districts; also recorded from Bechuanaland, South West Africa, and a few central districts. (Type: *J. curcas* Linn.)

4439 27. CEPHALOCROTON Hochst., Flora, vol. 24, p. 370 (1841)

Plants monoecious. *Petals* 0. *Male flowers*:—*Calyx* splitting into 3—5 valvate lobes. *Disc* 0. *Stamens* 5—8; filaments free; anther-thecae separate in the upper half. *Pistil* rudimentary, columnar, short, entire or 2—3-lobed. *Female flowers*:—*Sepals* 5—6, unequal, shortly pinnatifid, accrescent in fruit, glandular and stellately hairy. *Petals* 0. *Disc* small, annular. *Ovary* 3-chambered, rarely 4-chambered, with a single ovule in each chamber, glandular and stellately hairy; styles connate below, free, lobed or multifid above.

Capsule woody, 3-coccus, rarely 4-coccus, stellately hairy; cocci 2-valved. *Seed* ellipsoid; testa crustaceous; tegmen somewhat woolly; embryo small; endosperm fleshy.

Shrubs, with stellate hairs; leaves alternate, shortly petioled, oblong or oblong-elliptic; stipules small; inflorescence a terminal raceme, androgynous; the male flowers aggregated in an apical peduncled subglobose head; the female flowers basal, long pedicelled.

Species 8, all African; 2 species occur in the northern Transvaal, Ngamiland, and South West Africa.

4448

28. *CLUTIA* Linn., Sp. Pl., ed. 1, p. 1042 (1753)

Plants dioecious, very rarely monoecious. *Male flowers*:—*Sepals* 4—5, glabrous or hairy. *Petals* usually almost as long as the sepals, sessile or clawed, often with one or more glands at the base within. *Disc* of a single gland or lobed glands at the base of the sepals. *Stamens* 5; filaments connate into a tube. *Pistil* rudimentary, surrounded by the connate filaments. *Female flowers*:—*Sepals* 4—5. *Petals* as in the male. *Disc* as in the male. *Ovary* 3-chambered, with a single ovule in each chamber, glabrous, hairy, or warted; styles free or shortly connate at the base, 2-fid or 2-lobed, sometimes very short; stigmas often thick and laminated. *Capsule* usually woody, subglobose, breaking up into 3 entire or 2-fid valves, glabrous or hairy. *Seeds* usually black and shiny, carunculate; testa crustaceous; endosperm fleshy.

Shrubs or undershrubs, sometimes from a thick woody rootstock; leaves alternate, usually sessile or subsessile, ovate, elliptic, lanceolate, linear, or ericoid, often with the margins rolled, entire, glabrous or hairy; male flowers pedicelled in axillary fascicles; female flowers with longer pedicels than the male and often solitary.

An African genus of about 93 species; 37 species found in South Africa, extending from the Transvaal and Natal, through the coastal belt into Namaqualand and South West Africa; rare in the central districts. (Type: *C. puchella* Linn.)

4463

29. *RICINODENDRON* Muell.-Arg., in Flora, vol. 47, p. 533 (1864)

Plants dioecious. *Male flowers*:—*Sepals* 4—5, densely tomentose with stellate hairs. *Petals* 5, connate into a wide tube more or less truncate at the apex. *Stamens* 10—18, free; filaments narrow-linear, often hairy at the base. *Disc* of 5 more or less quadrate free bodies attached to the base of the petals. *Pistil* 0. *Female flowers*:—*Sepals* and *petals* very similar to those of the male. *Staminodes* 0. *Disc* basin-shaped, with a somewhat crenate rim, surrounding the base of the ovary. *Ovary* 1—3-chambered, with a single ovule in each chamber, densely tomentose with stellate hairs; style shorter than the ovary, bilobed or bipartite or divided half-way down into 3 lobes. *Fruit* drupaceous, about the size of a large walnut; endocarp woody, divided by a chamber which separates the endocarp into two portions except at the base and apex. *Seed* solitary; cotyledons thin, veined; endosperm copious, oily.

Trees; leaves alternate, long-petioled, digitately compound, with 5—7 leaflets; leaflets pale beneath, elliptic, ovate-elliptic, more rarely obovate, sparsely stellately hairy above, densely stellately hairy beneath; stipules deciduous; inflorescence a paniced cyme.

An African genus of 6 species; 1 species found in British Bechuanaland and South West Africa. (Type: *R. africanus* Muell.-Arg.)

4464 30. SUREGADA Rottl., *Gesellsch. Naturf. Freunde Neue Schrift.*, vol. 4, p. 206 (1951)

(*Gelonium* Roxb. non Gaertn.)

Plants dioecious, rarely monoecious. *Petals* 0. *Male flowers*:—*Sepals* 5, rarely 6, imbricate, often unequal and the 3 outer sepals very concave and with a blunt horn on the back. *Disc* shallowly basin-shaped, hairy. *Stamens* 6—60; filaments free. *Pistil* 0. *Female flowers*:—*Sepals* very similar to those of the male. *Disc* shallowly basin-shaped, sometimes bearing rudimentary staminodes, hairy. *Ovary* 2—3-chambered, with a single ovule in each chamber, glabrous; styles 2—3, shortly 2-fid or lacerate. *Fruit* somewhat woody, globose, or 3-didymous, capsular or drupaceous, 3- or 2-locular or by abortion 1-locular. *Seed* with crustaceous testa.

Trees or shrubs; leaves alternate, sessile or subsessile, obovate, elliptic, lanceolate, sometimes acuminate, entire or crenate, gland-dotted, glabrous; stipules connate, caducous; flowers in leaf-opposed sessile or subsessile cymose glomerules.

Species about 39, widely spread in the tropics of the eastern hemisphere; found also in Madagascar, the Philippine Islands, and tropical Africa; 2, probably 3, species in South Africa, extending from the Transvaal, through Natal and the coastal belt to the Uitenhage district. (Type: *G. bifarium* Roxb.)

NOTE.—For an account of the genera *Suregada* and *Gelonium*, see Bibliography.—E. P. P.

4478 31. SPIROSTACHYS Sond., in *Linnaea*, vol. 23, p. 106 (1850)

Plants monoecious. *Petals* 0. *Male flowers*:—*Calyx* usually 5-lobed, rarely 4-lobed. *Stamens* 3; filaments united into a slender tube. *Female flowers*:—*Calyx* 5-lobed. *Ovary* 3-chambered, rarely 2-chambered, with a single ovule in each chamber, glabrous; styles 3, rarely 2, connate into a thick cylindric column, with the lobes lanceolate, entire. *Capsule* 3-coccus, rarely 2-coccus, glabrous. *Seed* globose; testa chartaceous; endosperm fleshy.

Trees or shrubs; leaves alternate, shortly petioled, elliptic, ovate-elliptic, or lanceolate, entire or remotely crenate, with 2 glands at the junction of the petiole; blade glabrous; stipules small, caducous; inflorescence of lateral catkin-like spikes, with numerous male flowers above and a solitary or few basal female flowers, sometimes the female flowers wanting, with the female flowers on individual spikes advanced before the male flowers on the same spike open.

Species 1, widely spread in southern Africa; in South Africa recorded from the Transvaal, Swaziland, Zululand, and Natal; also from South West Africa. (Type: *S. africanus* Sond.)

4483 32. SAPIUM P. Br., *Hist. Jamaica*, p. 338 (1756)

Plants monoecious, rarely dioecious. *Petals* 0. *Calyx* usually 3-lobed. *Disc* 0. *Stamens* 2—3; filaments free. *Pistil* 0. *Female flowers*:—*Calyx* 2—3-lobed. *Disc* 0. *Ovary* 3-chambered, rarely 2-chambered, with a single ovule in each chamber; styles 3, rarely 2, free or slightly connate below, entire, sometimes styles recurved and lie on the ovary wall with their tips reaching almost to the base of the ovary. *Capsule* often woody, 3-coccus, rarely 2-coccus, often wrinkled; cocci 2-valved. *Seeds* globose or ellipsoid; endosperm fleshy, sometimes forming a cylindric mass within the seed; cotyledons elliptic.

Trees or shrubs; leaves alternate, elliptic or lanceolate, often subacuminate, entire or remotely toothed; stipules 0; inflorescence a terminal bisexual spike, with numerous male flowers above and a few basal female flowers; male flowers in axils of bracts, either solitary or few; bracts sometimes with 2—3 glands on either side at the base.

Species about 117, found in South America, tropical Asia, China, India, Australia, Madagascar, and tropical Africa; 3 species found in South Africa, extending from Natal to the Humansdorp and Knysna districts.

4498 33. EUPHORBIA Linn., Sp. Pl., ed. 1, p. 450 (1753)

Plants monoecious or dioecious. *Apparent flower* consisting of a number of stamens (male flowers) with or without an ovary (female flower). *Male flowers* usually arranged in groups opposite the involucre lobes, often mingled with a few or many membranous or woolly bracteoles, pedicelled and jointed to the pedicel. *Calyx* normally 0, rarely with a minute rudimentary calyx just above the articulation with the pedicel. *Stamen* solitary; anthers 2-theous, with the thecae usually subglobose and more or less diverging, longitudinally dehiscent. *Female flower* wholly or partly included in the involucre or exerted from it, sessile or pedicelled. *Calyx* 0 or minute and 3-lobed or very rarely cup-like or tubular. *Ovary* usually 3-chambered, very rarely 2—4- or 5-chambered, with a single pendulous ovule in each chamber; styles usually 3, rarely 2, 4, or 5, free or more or less connate into a column, entire or bifid. *Fruit* a capsule, usually 3-locular, rarely 2—4- or 5-locular, separating at maturity from the persistent central axis and opening along their inner face into 2 valves. *Seeds* with a crustaceous smooth or variously sculptured testa, caruncled; embryo straight; cotyledons flat; endosperm copious.

Herbs, shrublets, shrubs, or trees of very variable habit, herbaceous, woody, or succulent; spineless or spiny, with the stems and/or branches usually with copious milky juice; leaves alternate or the upper or all opposite, entire, toothed, rarely lobed, in the succulent species frequently reduced to minute rudiments or occasionally absent; stipules present or absent and in some of the succulent species modified into prickles or secondary spines above a pair of larger spines.

Species approximately 2,000, distributed throughout the world; close on 200 species in South Africa with a wide distribution. (Type: *E. antiquorum* Linn.)

4498a 34. ELAEOPHORBIA Stapf, in Hook. Ic., t. 2823 (1909)

Floral structure as in *Euphorbia* from which it differs by its fruit as follows: *Fruit* indehiscent, with a thick flesh enclosing a hard bony 3-locular "stone", marked with a slender groove down each of the very obtuse angles and with a pore on each face near the apex between the grooves; also, when separated from the flesh, there is an opening at the base. *Seed* solitary in each loculus, sometimes abortive in one or two of the loculi; endosperm copious, somewhat fleshy.

Trees with succulent angular branches; leaves alternate, fleshy, entire, with a pair of spines at the base; peduncles axillary, simple or once or perhaps twice forked.

An African genus of 4 described species; 1 species doubtfully recorded from the Transvaal. (Type: *E. drupifera* (Thonn.) Stapf)

4500 35. SYNADENIUM Boiss., in DC. Prodr., vol. 15, pt. 2, p. 187 (1862)

Plants monoecious or dioecious. *Apparent flower* consisting of a number of stamens (male flowers) and a single ovary (female flower), surrounded by a shallowly cup-shaped or saucer-shaped entire involucre with a very spreading or more rarely erect rim-like gland outside of and completely surrounding an inner series of 5 membranous inflexed-erect subquadrate fringed lobes; gland usually entire or sometimes 2—5-notched but not separated. *Male flowers* arranged in 5 groups opposite the involucre lobes and contained in

5 compartments with membranous walls. *Female flower* often absent. *Calyx* reduced to a rudimentary rim or of 3 minute or rarely well-developed conspicuous lobes. *Ovary* pedicelled, central in the involucre, with the pedicel surrounded by a membranous tube formed by the inner wall of the compartments containing the male flowers, 3-chambered, with a solitary ovule in each chamber; styles 3, united below, with the free portions bifid or rarely entire.

Shrubs or small trees, with the young branches fleshy and containing a milky juice; leaves alternate, more or less fleshy, entire; stipules 0; inflorescence a cyathia grouped into cymes, panicles, or umbels, pedunculate, axillary; bracts in pairs at the base of each involucre.

An African genus of about 15 species; 1 species recorded from the Transvaal, Swaziland, and Natal. (Type: *S. capsulare* (Boiss.) L. C. Wheeler)

4503 36. **MONADENIUM** Pax, in Engl. Bot. Jahrb., vol. 19, p. 126 (1894)

Plants monoecious. *Apparent flower* consisting of a number of stamens (male flowers) and usually a single ovary (female flower), surrounded by a cup-like involucre which is truncate at the top and open at one side to or below the middle and with a continuous gland around its top margin to the opening and which also encloses 5 membranous quadrate fringed erect lobes. *Male flowers* arranged in groups opposite the involucre-lobes, sometimes mingled with a few filiform glabrous bracteoles and the groups separated (always?) by deeply fringed membranous glabrous partitions. *Female flower*:—*Calyx* reduced to a mere rim or of 3 small deltoid acute lobes. *Ovary* stalked, recurved and exerted from the opening in the side of the involucre, 3-chambered, with a single pendulous ovule in each chamber; styles 3, free or united below, with the tips shortly to deeply bifid and often thickened. *Capsule* somewhat 3-angled, with or without a double crest along the angles. *Seed* oblong in outline, truncate at each end, carunculate.

Dwarf perennials, with cylindric succulent stems and branches or with a tuberous or perhaps woody root and erect annual herbaceous or subfleshy stems; leaves alternate, more or less fleshy; stipules minute; inflorescence a cyathia, often solitary but gradually developing into 3 or more cymes, produced on axillary peduncles or terminal on the stems or branches after the leaves have fallen; bracts usually connate in pairs into an oblique cup-like body or bract cup, with overlapping or gaping margins enclosing the solitary involucre.

An African genus of about 25 species; 1 species recorded from the Bechuanaland Protectorate, the Transvaal, Zululand, and Natal. (Type: *M. coccineum* Pax)

99. CALLITRICHACEAE

Flowers unisexual. *Male flowers*:—*Perianth* 0. *Stamens* 1; filament filiform, elongated or shorter than the ovary; anther 2-theous. *Female flowers*:—*Perianth* 0. *Ovary* sessile or shortly stalked, 4-furrowed and lobed, 4-chambered, sometimes 2-lobed and 2-chambered, with a single pendulous ovule in each chamber; styles 2, elongated or shorter than the ovary, papillose on either side. *Fruit* leathery, compressed, indehiscent, 4-lobed, 4-locular, sometimes 2-lobed and 2-locular, with the lobes dorsally margined or winged, 2—4-seeded. *Seeds* pendulous; embryo terete; endosperm fleshy.

Small terrestrial or aquatic herbs; leaves opposite, small, linear or obovate-spathulate, entire; flowers very small, axillary, solitary, very rarely a male and female flower from the same leaf-axil, forming an apparently bisexual flower; bracts linear-oblong, caducous.

Genus 1; species about 15, cosmopolitan.

4530 CALLITRICHE Linn., Sp. Pl., ed. 1, p. 969 (1753)

Characters of the family.

Two species occur in South Africa, extending from Natal to the Clanwilliam district. (Type: *C. palustris* Linn.)

100. BUXACEAE

Plants monoecious or dioecious. *Flowers* rarely a few bisexual. *Petals* 0. *Sepals* usually 4, sometimes 6 or 0, usually in 2 series, imbricate. *Stamens* 4 or 6, rarely more, when 4 then opposite the sepals, when 6 then 2 pairs opposite the inner sepals; filaments sometimes 0, when present then free; anthers often large, 2-theous, 2-valved or opening lengthwise. *Pistil* 0 or present and rudimentary. *Female flowers*:—*Calyx* 4—6-lobed; lobes imbricate; the outer lobes smaller. *Ovary* superior, 3-chambered, with 1—2 pendulous inverted ovules in each chamber; styles 3, free, often diverging, thick, undivided, persistent in the fruit. *Fruit* a loculicidal capsule, often 2-horned, sometimes a drupe. *Seeds* black, shining; cotyledons flat or thick; endosperm fleshy or horny.

Trees or shrubs, rarely herbs; leaves evergreen, alternate or opposite, entire; stipules 0; inflorescence a sessile or shortly peduncled raceme, spike, or cyme, or the flowers fascicled; flowers sessile or shortly pedicelled, with the terminal usually female and the remainder male.

Genera 7; species about 33, natives of Africa, the Malay Archipelago, America, Japan, and the northern hemisphere; rare in South America.

4534 NOTOBUXUS Oliv., in Hook. Ic., p. 78, pl. 1400 (1880—82)

Plants monoecious. *Disc* 0. *Male flowers*:—*Calyx* 4-lobed or segments free; segments in 2 series, imbricate. *Stamens* 4—8, opposite the perianth-segments; filaments absent; anthers in the South African species much longer than the calyx, elliptic, apiculate, 2-theous, dehiscing longitudinally. *Pistil* 0. *Female flowers*:—*Calyx* 4—6-lobed; lobes imbricate; the outer smaller. *Ovary* 3-chambered, with 2 pendulous ovules in each chamber; styles usually distant from one another, in the South African species thick, ovate, sub-acuminate, with a groove on the inner face. *Capsule* somewhat woody, globose or ovoid, loculicidal; valves sometimes 2-horned, tipped with the persistent styles. *Seeds* black, shining, oblong in outline, somewhat 3-angled in cross-section, testa crustaceous; endosperm fleshy or horny; cotyledons lanceolate.

Much-branched trees or shrubs; leaves opposite, shortly petioled or sessile, often obovate, entire; inflorescence a sessile or shortly peduncled axillary raceme or cyme; flowers sessile or shortly pedicelled; terminal flower female; lower flowers male; bracts resembling the sepals.

An African genus of 7 species; 2 species occur in South Africa, extending from Zululand and Natal to the Kingwilliamstown and East London districts. (Type: *N. natalensis* Oliv.)

101. ANACARDIACEAE

Plants sometimes dioecious or with occasional bisexual flowers. *Flowers* usually regular. *Calyx* 3—7-fid or 4-partite, rarely spathaceous or irregularly ruptured. *Petals* 3—7, rarely 0, usually free or rarely connate and adnate to the torus. *Disc* annular, saucer-shaped, or discoid, rarely stalked or of separate glands. *Stamens* very often twice the number of petals, rarely as

many, more rarely indefinite; filaments free; anthers 2-theous, opening lengthwise. *Ovary* superior, usually 1-chambered, rarely 2—5-chambered, very rarely carpels free, with a solitary ovule; ovule pendulous, or adnate to the ovary wall, or pendulous from a basal funicle; styles 1—3, free or connate, sometimes lateral; stigmas often capitate. *Fruit* usually a drupe, sometimes an achene, sometimes winged. *Seed* erect, horizontal, or pendulous; cotyledons often fleshy; endosperm thin or 0.

Shrubs or trees, often with resinous bark; leaves alternate, rarely opposite or subopposite, simple, pinnate, or 3-foliolate, entire or toothed; stipules 0, rarely rudimentary; inflorescence usually a panicle; flowers small.

Genera about 66, with over 500 species, found in all tropical and warm countries.

1. Leaves simple	2
Leaves compound	5
2. Stamens more than the number of petals	8. <i>Heeria</i> Meissn.
Stamens as many as the petals	3
3. Leaves opposite or subopposite ...	4. <i>Protorhus</i> Engl.
4. Leaves coarsely serrated	6. <i>Laurophyllum</i> Thunb.
Leaves entire, penninerved	8. <i>Heeria</i> Meissn.
5. Leaves 3-foliolate	6
Leaves pinnate	7
6. Ovule pendulous	7. <i>Smodingium</i> E. Mey.
Ovule basal	9. <i>Rhus</i> Linn.
7. Stamens as many as the petals ...	5. <i>Loxostylis</i> Spreng.
Stamens more than the number of petals	8
8. Leaflets abruptly acuminate... ..	1. <i>Sclerocarya</i> Hochst.
Leaflets often acuminate but not abruptly acuminate	9
9. Fruit bearing the 4 persistent small distant styles	3. <i>Lannea</i> A. Rich.
Fruit not bearing the persistent styles	2. <i>Harpephyllum</i> Bernh.

4558 1. *SCLEROCARYA* Hochst., in *Flora*, vol. 27, Bes. Beil. 1 (1844)

Flowers bisexual, with occasional unisexual flowers on the same plant. *Sepals* 4, oblong or orbicular, imbricate. *Petals* 4, oblong or obovate, obtuse, longer than the sepals, imbricate. *Disc* depressed, entire, or somewhat raised in the male flowers. *Stamens* in the male flowers 12—20, in the female flowers fewer and mostly without anthers; filaments terete, thicker in the lower portion; anthers oblong, 2-theous, with longitudinal dehiscence. *Ovary* 2—3-chambered, with a solitary pendulous ovule in each chamber; styles 2—3, distant, short, thick; stigmas peltate. *Fruit* a 2—3-locular fleshy drupe about the size of a large walnut. *Seed* solitary in each loculus; cotyledons thick, plano-convex, endosperm 0.

Tall trees or shrubs; leaves crowded at the apex of the branches, alternate, imparipinnate; leaflets petioled, entire, abruptly acuminate in the South African species; inflorescence a spike.

Species 5, all African; 2 species described from South Africa and found in South West Africa, the Transvaal, and Natal. (Type: *S. birroea* Hochst.)

4562 2. HARPEPHYLLUM Bernh. ex Krauss, in *Flora*, vol. 27, p. 349 (1844)

Plants dioecious. *Male flower*:—*Calyx* 4—5-lobed; lobes ovate, obtuse, somewhat concave. *Petals* 4—5, longer than the calyx, oblong, obtuse. *Disc* saucer-shaped, with a somewhat crenate rim. *Stamens* 8—10, slightly shorter than the petals; filaments subterete; anthers oblong. *Pistil* rudimentary. *Female flowers*:—*Calyx* and *petals* as in male. *Disc* as in the male. *Stamens* 8 or 10, well developed but functionless. *Ovary* thick, more or less ellipsoid, with thick walls, 1-chambered, with a solitary pendulous ovule; styles usually 3, thick, separated; stigmas truncate. *Fruit* an obovate smooth subfleshy drupe; endocarp fibrous, woody. *Seed* 1; testa membranous; cotyledons flat, oblong; endosperm scanty.

A tall glabrous tree; leaves often large, alternate, petioled, imparipinnate, crowded at the apex of the branches; leaflets falcate-lanceolate, unequal-sided, entire; inflorescence a panicle.

Endemic; species 1, found in the Transvaal, Natal, and the eastern coastal belt to the Uitenhage district. (Type: *H. caffrum* Bernh.)

4563 3. LANNEA A. Rich., in Guill. et Perr., *Fl. Senegambia* Tent, p. 153, t. 42 (1832)
(*Odina* Roxb.)

Flowers bisexual, with occasional unisexual flowers on the same plant. *Calyx* shortly 4-lobed, persistent; lobes ovate, obtuse. *Petals* 4, rarely 6, sessile, longer than the calyx, obovate or elliptic, spreading, imbricate. *Disc* annular, fleshy, entire or crenate. *Stamens* 8, inserted on the disc, longer or shorter than the ovary; filaments flattened; anthers ovate, sometimes subsagittate. *Ovary* in the male 4- (rarely 6-) partite; in the bisexual flowers 1-chambered, with 1 pendulous ovule; style 4, often short, thick, terete, sometimes longer than the petals; stigmas simple or subcapitate. *Fruit* a drupe, crowned with the remains of the persistent styles; endocarp bony, with raised ribs and hollows on one side. *Seed* half-moon-shaped; testa membranous; embryo conforming to the shape of the seed; cotyledons thick; radical small; endosperm 0.

Trees, rarely acaulescent; leaves alternate, pinnate; leaflets opposite, large or small, often discolorous; rhachis sometimes shortly winged; flowers small in simple or paniced terminal racemes; peduncle sometimes stellately hairy.

Species about 70, natives of Africa and India; 4 species in South Africa, found in the Transvaal, Natal, and South West Africa. (Type: *L. velutina* A. Rich.)

4576 4. PROTORHUS Engl., *Bot. Jahrb.*, vol. 1, p. 420 (1881)

Plants sometimes dioecious, with occasional bisexual flowers. *Calyx* saucer-shaped, 5-partite; lobes ovate. *Petals* 5, erect, longer than the calyx, oblong, imbricate. *Disc* saucer-shaped, thick, urceolate in the male flowers. *Stamens* 5, inserted below the rim of the disc; filaments flattened, about as long as the ovary; anthers much shorter than the filaments. *Ovary* ovoid or subglobose, 1—3-chambered, with a solitary pendulous ovule in each chamber which has the funicle attached laterally to the ovary wall, with oil ducts in ovary wall; styles 3, connate at the base; stigmas capitate. *Fruit* a black (always?) drupe, 1-locular, 1-seeded. *Seed* oblong; testa membranous; cotyledons large, thick, flat, elliptic; endosperm 0.

Trees or shrubs; leaves opposite or subopposite, simple, oblong, obovate, or linear, distinctly penninerved; inflorescence a small axillary, or large terminal, panicle; flowers small.

Species about 12, natives of Africa and Madagascar; 2 species in South Africa, found in the Transvaal, Natal, the Transkei, and Namaqualand. (Type: *P. longifolia* (Bernh.) Engl.)

4586 5. LOXOSTYLIS Spreng. ex Reichenb., Icon. Exot., vol. 3, p. 3, t. 205 (1827)

Plants dioecious. *Male flowers*:—*Calyx-tube* campanulate; lobes 5, ovate, subacuminate. *Petals* 5, much longer than the calyx, subsessile, lanceolate, reflexed. *Disc* of five 2-lobed scales. *Stamens* 5, free, unequal, inserted between the disc-scales; filaments terete, shorter than the petals; anthers oblong, opening lengthwise. *Pistil* 0. *Female flowers*:—*Calyx* 5-parted almost to the base; segments lanceolate-linear, becoming enlarged and pinkish in fruit. *Petals* similar to the sepals and as long. *Disc* of 5 broad shallowly 2-notched glands. *Rudimentary stamens* present. *Ovary* obliquely obovoid, 1-chambered, with a single basal ovule; covered with papillae; styles 1—4, arising laterally, of unequal lengths; stigmas capitate. *Fruit* a dry drupe, oblique, somewhat flattened; 1-locular, 1-seeded, included in the persistent calyx with the remains of the styles, rugose; exocarp parchment-like; endocarp longitudinally furrowed, with black resinous oil ducts in the tissue. *Seed* compressed; testa chartaceous; endosperm 0.

A tree; leaves alternate, petioled, imparipinnate, 2—6-jugate; leaflets opposite, lanceolate, shortly mucronate; rhachis winged; inflorescence a terminal panicle.

Endemic; species 1, extending from Natal to the Humansdorp and Uitenhage districts. (Type: *L. alata* Spreng.)

4587 6. LAUROPHYLLUS Thunb., Nov. Gen., vol. 6, p. 104 (1792)
(*Botryceras* Willd.)

Plants dioecious. *Male flowers*:—*Calyx* 4—5-cleft nearly to the base; lobes ovate, imbricate. *Petals* 4—5, similar to the sepals and about as long. *Disc* fleshy, somewhat convex. *Stamens* 4—5, slightly exserted, alternating with the calyx-segments; filaments terete, about as long as the anthers; anthers 2-theous, subglobose, with the thecae somewhat separated. *Pistil* 0. *Female flowers*:—*Calyx-lobes* ovate. *Petals* coloured, as long as the sepals, lanceolate. *Ovary* subcompressed, suborbicular, 1-chambered, with a single pendulous ovule; style lateral, much shorter than the ovary; stigma minutely 2-lobed. *Fruit* a small achene, compressed, narrowly winged on the margin; pericarp membranous, with raised veins. *Seed* with a chartaceous testa; cotyledons flat; endosperm 0.

A tree or large shrub, resinous; leaves alternate, simple, petioled, elliptic, serrated; male inflorescence a terminal panicle; female inflorescence very dense, with the branches becoming woody and bearing the female flowers; the whole resembling a cluster of much-branched anthers.

Endemic; species 1, extending from the Swellendam to the Uitenhage district. (Type: *L. capensis* Thunb.)

4588 7. SMODINGIUM E. Mey., in Drège Zwei Pflanzengeogr. Docum., p. 222 (1843)

Plants dioecious. *Male flowers*:—*Calyx* 5-cleft, persistent; segments ovate. *Petals* 5, reflexed, longer than the calyx, elliptic. *Disc* discoid, with subcrenated edges. *Stamens* 5, shorter than the petals, opposite the calyx-segments; filaments subterete; anthers subglobose, 2-theous, with the thecae somewhat separated. *Female flowers*:—*Calyx* and *petals* as in the male. *Disc* annular. *Rudimentary stamens* 5, very short. *Ovary* suborbicular, somewhat flattened, 1-chambered, with a solitary pendulous ovule. *Styles*

3, free, lateral, shorter than the ovary, persistent; stigmas capitate. *Fruit* an achene, suborbicular, oblique, with a membranous pericarp containing black resinous ducts. *Seed* solitary, kidney-shaped; testa chartaceous; cotyledons flat, conforming to the shape of the seed; radicle bent.

A glabrous shrub; leaves alternate, petioled, digitately 3-foliolate; leaflets lanceolate, coarsely toothed; inflorescence a dense terminal panicle; flowers small.

Endemic; species 1, found in the Transvaal, Zululand, Natal, Basutoland to Pondoland. (Type: *S. argutum* E. Mey.)

4589

8. *HEERIA* Meissn., Gen., p. 75 (1837)

(Anaphrenium E. Mey.)

Plants dioecious. *Male flowers*:—*Calyx* divided almost to the base; segments ovate, obtuse. *Petals* longer than the calyx, elliptic. *Disc* discoid, lobed. *Stamens* 5, rarely 10, shorter than the petals; filaments terete; anthers 2-theccous, with longitudinal dehiscence. *Female flowers*:—*Calyx* and *petals* as in the male. *Disc* saucer-shaped or annular. *Stamens* 5, not functional. *Ovary* 1-chambered, with a single basal ovule; styles 3, short, thick, connate; stigmas capitate. *Fruit* often black, a dry or a subfleshy drupe of the size of a cherry or much smaller and often laterally oblong. *Seed* pendulous from a basal funicle; cotyledons often fleshy; endosperm 0.

Shrubs or small trees; leaves alternate, simple, petioled or sessile, elliptic, obovate, lanceolate, linear-oblong, or oblong, often apiculate, distinctly pinnerved, usually discoloured, glabrous or hairy; inflorescence a terminal panicle, longer or shorter than the leaves.

Species about 37, all African; 8 species in South Africa, extending from the Transvaal, Zululand, and Natal to the south-western districts of the Cape Province; also found in South West Africa.

4594

9. *RHUS* Linn., Sp. Pl., ed. 1, p. 265 (1753)

Plants typically dioecious, very rarely truly bisexual flowers present. *Calyx* of 5 segments, sometimes segments unequal. *Petals* 5, usually greenish yellow or whitish, usually longer than the sepals and oblong-ovate. *Disc* usually 5-crenate, very often slightly crisped, sometimes 10-crenate. *Male flowers*:—*Stamens* 5. *Rudimentary* pistil 0. *Female flowers*:—*Staminodes* usually 5. *Ovary* 1-chambered, more or less globose; styles 3, short, free, filamentous. *Fruit* a fleshy or more or less dry drupe, greenish, red, or brown, usually smooth and glabrous, more rarely hairy or wrinkled. *Seed* solitary; cotyledons flat; endosperm 0.

Usually much-branched shrubs, rarely trees or dwarf and unbranched, sometimes thorny; leaves alternate, usually petioled, normally 3-foliolate, with the petiole usually canaliculate above, and sometimes narrowly winged; leaflets often ovate or obovate, sometimes linear or lanceolate, usually cuneate at the base; inflorescence a panicle, lax or dense, axillary or terminal; flowers small; usually pedicelled; bracts present.

Species about 250, natives of most tropical and subtropical countries; over 60 species described from South Africa and widely distributed. (Type: *R. coriaria* Linn.)

102. AQUIFOLIACEAE

Flowers regular, bisexual or unisexual. *Calyx* 3—6-partite or 4-toothed, imbricate, persistent. *Petals* 4—5, rarely more, free or connate at the base, imbricate. *Disc* 0 or adhering to the ovary. *Stamens* as many as the petals,

rarely more, free, often epipetalous; filaments subulate; anthers 2-thecous, dehiscing longitudinally. *Ovary* superior, 2—4—5- (rarely many-) chambered, with 1 or 2 pendulous ovules in each chamber; style terminal or 0; stigmas 4—6, often confluent. *Fruit* a drupe of 3 or more 1-seeded pyrenes. *Seed* with copious endosperm and a small straight embryo.

Trees or shrubs, mostly evergreen, often with watery juice; leaves alternate, petioled, simple, often entire; stipules 0; inflorescence an axillary and terminal cyme or axillary panicle, rarely flowers solitary or fascicled in the axils of the leaves; flowers small.

Genera 4; species about 300, found mostly in Asia and tropical America.

4614

ILEX Linn., Sp. Pl., ed. 1, p. 125 (1753)

Plants sometimes dioecious. *Calyx* small, often basin-shaped, 4—6-toothed, persistent. *Corolla-tube* very short, rotate, 4—6-parted; lobes obovate-elliptic. *Stamens* affixed in the corolla-throat, as many as the corolla-lobes and alternating with them; filaments subterete, about as long as the anthers or longer; stamens in female flowers developed but without pollen in the anthers. *Ovary* in male flowers prominent but rudimentary; in female flowers sessile, 3—6-chambered, with 1—2 ovules in each chamber; style 0 or short; stigmas 4—6, usually connate. *Fruit* a globose drupe, sometimes the size of a small pea, crowned with the persistent stigmas. *Seed* sometimes 2-angled, endosperm fleshy or horny; embryo often cylindric.

Trees or shrubs; leaves entire or toothed, often shining; flowers on few-flowered axillary peduncles which are often branched.

Species about 260, mostly natives of Asia and America; 1 species in South Africa, extending from the Transvaal, Zululand, Swaziland, Basutoland, through the coastal area to the south-western districts of the Cape Province. (Type: *I. aquifolium* Linn.)

NOTE.—The South African plant does not bear bisexual flowers so far as I have been able to discover. The female flowers have well-developed stamens but the anthers are devoid of pollen.—E. P. P.

103. CELASTRACEAE

Flowers bisexual or unisexual. *Calyx* 3—4—5-partite; segments entire or cut, imbricate, persistent. *Petals* 3—4—5, rarely 6, free, usually longer than the calyx, deciduous. *Disc* fleshy, often saucer-shaped, 4—5-lobed or entire, sometimes partly enveloping the ovary. *Stamens* 3—4—5, inserted under or on the margin of the disc, usually longer than the petals; filaments often broadened at the base; anthers 2-thecous, basi- or dorsi-fixed, opening by longitudinal slits. *Ovary* superior, but sometimes partly immersed in the disc, 1—5-chambered, with usually 2, sometimes 3—6, erect or pendulous ovules in each chamber; style usually thick, sometimes almost obsolete; stigma 2—5-lobed, rarely lobes bifid. *Fruit* a capsule, berry, or drupe. *Seed* with or without an arillus; cotyledons flat; endosperm present or none.

Trees or shrubs, sometimes twining, armed or unarmed; leaves often leathery, opposite or alternate, simple, entire or toothed; stipules small, mostly caducous; inflorescence an axillary cyme or fascicle, more rarely a raceme; flowers usually small.

Genera 40; species over 400, widely spread except in the frigid zone, frequent in the tropics, less frequent in the temperate regions.

1. Petals and stamens ... 3	...	...	6. Pseudocassine Bredell	
Petals and stamens 4—5	...	...	...	2
2. Leaves alternate	...	...	...	3
Leaves opposite	...	...	...	6

- | | | |
|---|----------------------------------|-----|
| 3. Fruit winged or horned | 4. <i>Pterocelastrus</i> Meissn. | 4 |
| Fruit not winged or horned | ... | ... |
| 4. Ovary with 3—6 ovules in each chamber | 2. <i>Putterlickia</i> Endl. | 5 |
| Ovary with 2 ovules in each chamber | ... | ... |
| 5. Fruit a capsule | 1. <i>Gymnosporia</i> Hook. f. | |
| Fruit a drupe | 5. <i>Cassine</i> Linn. | |
| 6. Ovary 1-chambered; style lateral in the fruit | 9. <i>Pleurostyliia</i> W. & A. | 7 |
| Ovary more than 1-chambered; style terminal in the fruit | ... | ... |
| 7. Fruit a capsule | 3. <i>Catha</i> Forsk. | 8 |
| Fruit a dry or fleshy drupe | ... | ... |
| 8. Ovules pendulous | 7. <i>Maurocenia</i> Adans. | 9 |
| Ovules erect | ... | ... |
| 9. Inflorescence a raceme | 10. <i>Lauridia</i> E. & Z. | 10 |
| Inflorescence a cyme | ... | ... |
| 10. Disc 4-lobed; seed with scanty endosperm | 8. <i>Hartogia</i> Linn. f. | |
| Disc not 4-lobed; seed with copious endosperm | 5. <i>Cassine</i> Linn. | |

4627 1. GYMNOSPORIA Hook. f., in Bth. et Hook. f. Gen. Plant., vol. 1, p. 365 (1862)

Sepals 5, sometimes unequal, acute or obtuse, sometimes acuminate, with entire or deeply lacinated or fimbriated margins. *Petals* normally longer than the sepals, oblong to suborbicular, with the margins entire or ciliated or undulate. *Disc* deeply 5-lobed, sometimes 5-angled, sometimes discoid or collar-like or saucer-shaped with crenate or undulate margins. *Stamens* 5; filaments usually flattened, longer or shorter than the petals; anthers 2-theccous. *Ovary* usually immersed in the disc, 2—4-chambered, with 2 basal ovules in each chamber; style usually short, sometimes 0; stigma shortly 2—4-lobed, or hardly divided, sometimes globose, rarely stigmatic; lobes linear and about as long as the style. *Fruit* a capsule. *Seed* usually reddish-brown, usually subglobose, often with an aril and often completely enveloped in the aril; embryo straight; cotyledons flat, elliptic, lanceolate, or suborbicular; endosperm usually copious, fleshy or horny.

Trees or shrubs; leaves alternate, usually subsessile, often tufted, often cuneate or rounded at the base; entire or serrated, sometimes with revolute margins; flowers solitary, fascicled, or in cymes; pedicels often articulated.

Species about 112, found in almost all tropical and subtropical countries; 40 species in South Africa, widely distributed. (Type: *G. montanus* (Roxb.) Benth.)

4628 2. PUTTERLICKIA Endl., Gen., p. 1086 (1840)

Sepals 5, ovate, concave, with shortly ciliated margins. *Petals* 5, sometimes unequal, with the outer 2 smaller than the 3 inner, oblong or obovate. *Disc* flattened or saucer-shaped, not or hardly enveloping the ovary. *Stamens* 5, shorter than the petals; filaments flattened; anthers 2-theccous. *Ovary* 3-chambered, with 3—6 ovules in each chamber; style thick, terete, shortly 3-lobed, sometimes very short. *Fruit* a 3-angled capsule. *Seeds* reddish, almost completely enveloped in an aril; embryo straight; cotyledons ovate or elliptic; endosperm fleshy, copious.

Glabrous shrubs, with strong spines which are either naked or bear small tufts of leaves or undeveloped buds; branches smooth or verrucose; leaves alternate, sessile, mostly obovate or spatulate, narrowed to the base; inflorescence a lax or several-flowered cyme; pedicels sometimes articulated.

Endemic; species 2, extending from the Transvaal and Natal to the southwestern districts of the Cape Province; also found in Griqualand West. (Type: *P. pyracantha* (L.) Endl.)

4629 3. CATHA Forsk., Fl. Aegypt. Arab., p. 63 (1775)

Sepals 5, small, ovate, sometimes ciliate. *Petals* 5, much longer than the sepals, oblong to elliptic. *Disc* saucer-shaped, with a crenate margin. *Stamens* 5, shorter than the petals; filaments subterete; anthers 2-theous. *Ovary* not enveloped by the disc, 3-chambered, with 2 basal ovules in each chamber; style 0 or short; stigmatic lobes 3. *Fruit* a capsule, oblong in outline. *Seed* reddish, oblong, flattened on one face and with marginal subcrenate keels and with 2 prominent keels on the back; embryo straight; cotyledons oblong; endosperm present.

Glabrous unarmed shrubs, with compressed glaucous twigs; leaves leathery, opposite, petioled, lanceolate, with serrated margins; inflorescence an axillary cyme, much shorter than the leaves.

Species 1, extending from the Transvaal and Natal to the Knysna district. (Type: *C. edulis* Forsk.)

4630 4. PTEROCELASTRUS Meissn., Gen., p. 68 (1837)

Sepals 5, membranous, unequal. *Petals* 5, occasionally 6, often brown-flecked, longer than the sepals, elliptic. *Disc* discoid or basin-shaped, obsoletely 5-lobed and sometimes enveloping the lower portion of the ovary. *Stamens* 5, shorter than the petals; filaments somewhat flattened; anthers 2-theous. *Ovary* normally 3-chambered, rarely deeply 5-angled, occasionally 2-chambered, with 2 erect ovules in each chamber; style short, thick; stigma usually 3-lobed, more rarely 2-lobed, sometimes triangular capitate. *Fruit* a dry woody capsule, with abrupt horns or wing-like outgrowths which may be variously divided. *Seed* reddish, enveloped in the aril; embryo straight; cotyledons lanceolate; endosperm fleshy.

Unarmed trees or shrubs, sometimes scandent, with brownish-grey terete branches and angular twigs; leaves leathery, alternate, petioled, lanceolate, oblong-lanceolate, elliptic-lanceolate, or obovate, sometimes obtusely acuminate, normally entire; inflorescence a lax or dense cyme.

Endemic; species 5, extending from the Transvaal and Natal, through the coastal belt to the Clanwilliam district.

4641 5. CASSINE Linn., Sp. Pl., ed. 1, p. 269 (1753)

(*Mystroxydon* E. & Z.; *Elaeodendron* Jacq.; *Scytophyllum* E. & Z.)

Sepals 4—5, usually somewhat fleshy, usually with shortly laciniated margins, sometimes hairy. *Petals* 4—5, longer than the sepals, oblong or suborbicular. *Disc* fleshy, collar-like, saucer-shaped, or flat, either surrounding the base of the ovary or quite or half enveloping it. *Stamens* 5, shorter than the sepals; filaments flattened; anthers 2-theous. *Ovary* 2—3-chambered, rarely 4-chambered, with 2 erect ovules in each chamber; style usually very short; stigma entire or shortly 2—3-lobed. *Fruit* a dry or subfleshy drupe, ranging in size from that of a small pea to that of a small cherry, sometimes hard and woody. *Seed* reddish, without an aril; embryo straight; cotyledons flat, linear to elliptic; endosperm copious, fleshy.

Unarmed trees or shrubs, sometimes twining, with the twigs sometimes slightly winged; leaves leathery, opposite or alternate, sessile or shortly petioled, elliptic, ovate, obovate, orbicular, or lanceolate, sometimes subcordate at the base, with entire, crenate, or serrate margins; inflorescence a cyme.

Species about 55, found in Africa, Madagascar, Australia, and tropical America; 16 species in South Africa, extending from the Transvaal and Natal, through the coastal belt to the south-western districts of the Cape Province. (Type: *C. maurocenia* Linn.)

NOTE.—There is some doubt about the correct generic name for the group of plants placed under *Cassine* Linn. If the proposed standard species of Linnean generic names as given in the International Rules of Botanical Nomenclature (1935) are accepted then the genus *Cassine* Linn. is a monotypic genus with the single species described as *Maurocenia capensis* Sond. and the type species of *Cassine* is *C. maurocenia* Linn. Another name will have to be found for the plants now placed under the genus *Cassine*.—E. P. P.

4641a **6. PSEUDOCASSINE** Bredell, S. Afr. Journ. Sc., vol. 33, p. 330 (1937)

Sepals 3, equal, with entire margins. *Petals* 3, equal, spreading, longer than the sepals, ovate to elliptic-ovate, swollen at the base. *Disc* fleshy, obscurely 3-lobed. *Stamens* 3, shorter than the petals, inserted near the margin of the disc; filaments somewhat broadened at the base; anthers broadly oblong, with extrorse dehiscence. *Ovary* subimmersed in the disc, ovoid, 3-chambered, with 2 basal ovules in each chamber; style short; stigma entire, minute. *Fruit* indehiscent, with a hard woody shell, 1—2-locular, with not more than one developed seed in each. *Seeds* erect, without an aril; cotyledons flat; endosperm fleshy.

A tree; leaves leathery, alternate or opposite to subopposite on the young branches, elliptic, obovate, oblong, or lanceolate, mostly with entire margins; stipules 0; inflorescence an axillary many-flowered cyme as long as or shorter than the leaves.

Endemic; species 1, recorded from Natal, the Transvaal, and South West Africa. (Type: *P. transvaalensis* (Burt Davy) Bredell=*Salacia* (?) *transvaalensis* Burt Davy)

4644 **7. MAUROCENIA** Adans., Fam., vol. 2, p. 303 (1763)

Sepals 4—5, small, equal. *Petals* 5, ovate or oblong, longer than the calyx, with slightly irregular margins. *Disc* fleshy, saucer-shaped. *Stamens* 5, inserted on the outside of the disc, longer than the petals; filaments subterete; anthers subglobose. *Ovary* 2-chambered, with 2 pendulous ovules in each chamber; stigma subsessile, 2-lobed. *Fruit* somewhat fleshy, 2-locular, with a single seed developed in each loculus. *Seed* black, flattened, without an aril; endosperm 0; cotyledons flat.

An erect unarmed glabrous shrub, with grey terete branches and purplish annular twigs; leaves opposite, leathery, elliptic, ovate, or suborbicular, with entire hard-rigged revolute margins and a prominent midrib on the under surface; inflorescence a short several-flowered cyme; peduncle short, stout; pedicels articulated.

Endemic; species 1, found in the south-western districts of the Cape Province from the Malmesbury district to the Cape. (Type: *M. frangula* Mill.)

4645 **8. HARTOGIA** Linn. f., Suppl., p. 16 (1781)

Sepals 4, equal, ovate, shortly and sparsely pectinate on the margins. *Petals* 4, longer than the sepals, oblong. *Disc* saucer-shaped. *Stamens* 4, inserted on the outside of the disc, often in a depression of the disc, shorter than the petals; filaments sometimes not much longer than the anthers. *Ovary* sometimes immersed in the disc, 2-chambered, with 2 basal ovules in each chamber; style very short; stigmas 2, bifid. *Fruit* fleshy when young, at

length dry and indehiscent, 1—2-locular, ellipsoid. *Seed* solitary or one in each loculus, elliptic in outline, often deeply concave on one face, somewhat rugose, covered with short golden papillae, without an aril; cotyledons elliptic, flat; endosperm scanty.

Small unarmed trees or shrubs; leaves leathery, opposite, shortly petioled, usually lanceolate, with shortly toothed margins; inflorescence a small short somewhat lax cyme; flowers small.

Species 3; one found in Madagascar, one in Somaliland; the South African species extends from the Malmesbury to the Albany district. (Type: *H. capensis* Linn. f.)

4646 9. PLEUROSTYLIA Wight & Arn., Prodr. Fl. Pen. Ind. Or., vol. 1, p. 157 (1834)

Sepals 4—5, ovate, equal. *Petals* 4—5, longer than the sepals, oblong or suborbicular, reflexed. *Disc* fleshy, saucer-shaped, with a crenate margin. *Stamens* 4—5, on the outside of the disc, longer than the petals; filaments linear; anthers subglobose. *Ovary* 1-chambered, with 2—5 ovules on parietal placentas; style very short; stigma peltate. *Fruit* dry, more or less club-shaped, with the remains of the style and stigma on one side near the base. *Seed* solitary, without an aril; endosperm 0.

Large glabrous unarmed trees, with greyish bark which contains a red pigment; leaves opposite, shortly petioled or subsessile, elliptic or lanceolate, sometimes with slightly undulate margins; inflorescence a small axillary raceme; flowers small.

Species 4, natives of India, Ceylon, Africa, Madagascar, and Mauritius; 1 species in South Africa extending from Zululand to the Kingwilliamstown district. (Type: *P. wightii*, W. & A.)

4647 10. LAURIDIA E. & Z., Enum., p. 124 (1835)

Sepals 4, ovate, equal. *Petals* 4, longer than the sepals, elliptic. *Disc* saucer-shaped, obscurely lobed on the margin. *Stamens* 4, inserted on the margin of the disc, longer(?) than the petals; filaments sublinear; anthers ovate. *Ovary* half-immersed in the disc, 2-chambered, with 2 erect ovules in each chamber; style very short; stigma obscurely 2-lobed. *Fruit* fleshy, 2-locular. *Seed* often solitary; endosperm present.

A glabrous unarmed shrub; leaves leathery, opposite, shortly petioled, lanceolate or elliptic, entire or sometimes with a few teeth on the margins; inflorescence an axillary raceme shorter than the leaves; flowers small.

Endemic; species 1, recorded from the George, Humansdorp, and Albany districts. (Type: *L. reticulata* E. & Z.)

NOTE.—*Lauridia multiflora* Engl. is *Salvadora persica* Garcin.—E. P. P.

104. HIPPOCRATEACEAE

Flowers bisexual, regular. *Calyx* 4—5-parted, imbricate. *Petals* 4—5, sometimes larger than the calyx, imbricate or more rarely valvate. *Disc* conical, cupular, or saucer-shaped, sometimes of separate lobes, sometimes inconspicuous. *Stamens* usually 3, sometimes 2 or 4 or 5, alternating with the petals, situated on the disc, sometimes adnate to the ovary; filaments free or sometimes connate at the base, often expanded; anthers subdidymous. *Ovary* superior, often immersed in the disc, often 3-lobed, 3-chambered, with 2—10 ovules in 1—2 rows in each chamber; style short or 0; stigma 3-fid or 3-lobed, more rarely simple. *Fruit* capsular or fleshy, 1- or more-seeded. *Seed* compressed or angled, sometimes globose; cotyledons thick, fleshy or horny, fused; endosperm 0.

Small trees or shrubs, sometimes scandent; leaves opposite, more rarely alternate, simple, entire or toothed; stipules small or 0; inflorescence an axillary panicle or cyme, usually much shorter than the leaves, rarely flowers solitary or 2-nate; flowers usually small.

Genera 3; species about 454, natives of Africa, Madagascar, America, the Philippine Islands, and Hong Kong.

Climbing plants; fruit separating into three carpels; seeds winged

1. *Hippocratea* Linn.

Not climbers; fruit fleshy; seeds not winged

2. *Salacia* Linn.

4661 HIPPOCRATEA Linn., Sp. Pl., ed. 1, p. 1191 (1753)

Sepals 5, small, ovate or linear. *Petals* 5, sometimes leathery, usually longer than the sepals, ovate, oblong, elliptic, or linear-spathulate, valvate or imbricate. *Disc* conical, cupular, or saucer-shaped, conspicuous or not. *Stamens* 3, rarely 5 and 2—3 without anthers, inserted inside the disc, usually shorter than the petals; filaments broadened, free or adnate to the ovary; anthers didymous, 2—4 thecous, with the thecae at length confluent. *Ovary* free or confluent with the disc, often 3-lobed, 3-chambered, with 2—6 ovules in 2 series in each chamber; style evident, very short, or 0, 3-fid or 3-lobed. *Fruit* separating into 3 carpels, connate at the base; carpels often much compressed and narrowly boat-shaped, 2-valved or indehiscent. *Seed* somewhat compressed, often winged, cotyledons large, often horny.

Trees or climbing shrubs; leaves opposite, petioled, entire or toothed, with the petiole often articulated at the base; stipules small, caducous; inflorescence an axillary cyme or panicle; flowers small; bracteoles 2.

Species about 193, natives of Africa, Madagascar, America, the Philippine Islands, and Hong Kong; 6 species (perhaps 1 or 2 more) in South Africa, recorded from Ngamiland, Bechuanaland, the northern Transvaal, Zululand, and to the Kentani district. (Type: *H. volubilis* Linn.)

4662 2. SALACIA Linn., Mant., vol. 2, pp. 159, 293 (1771)

Calyx small, deeply 4—5 partite, segments ovate. *Petals* 4—5, sometimes leathery, spreading, ovate or elliptic, sometimes with a membranous apex, sometimes adnate to the disc, imbricate. *Disc* thick, expanded or conical, often sinuate, sometimes of 5 transversely oblong lobes. *Stamens* 3, very rarely 2 or 4, situated inside the disc and sometimes adnate to the ovary, usually shorter than the petals; filaments linear and globose at the base or filaments expanded and ovate. *Ovary* half-immersed in the disc, 3-lobed, 3-chambered, with 2—4 or more ovules in 1—2 rows in each chamber; style short or long; stigma simple or 3-lobed. *Fruit* fleshy, 1—3-locular, with each loculus 1—4-seeded. *Seeds* (where known) large, angled or globose; cotyledons thick.

Trees or shrubs; leaves opposite or alternate, entire or toothed; stipules 0; inflorescence a cyme, more rarely a panicle or flowers fascicled, rarely flowers solitary or 2-nate.

Species about 260, found in all tropical countries; 4 species in South Africa recorded from South West Africa, the Transvaal, Zululand, Natal to Pondoland.

105. ICACINACEAE

Flowers regular, bisexual, sometimes with a single perianth-whorl. *Calyx* 4—5- (rarely 3-) toothed or lobed. *Petals* as many as the sepals, free or united at the base, imbricate or valvate. *Stamens* as many as the petals and alternating with them; filaments free or connate, sometimes hairy; anthers 2-thecous.

Ovary superior, 1- (rarely 3—5-) chambered, with 2 (or 1) pendulous ovules, often hairy; style simple or 0. *Fruit* a drupe. *Seed* pendulous; embryo usually small; endosperm present.

Trees or shrubs, rarely climbing, sometimes spiny; leaves alternate or opposite, simple, entire, toothed, or lobed; stipules 0; inflorescence various.

Genera 48; species about 180, natives of Africa, Madagascar, Australia, India, New Zealand, America, and the Malay Archipelago.

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|--|-----|-----|-----|------------------------------|---|
| 1. Leaves opposite | ... | ... | ... | 1. <i>Cassinopsis</i> Sond. | |
| Leaves alternate | ... | ... | ... | ... | 2 |
| 2. Flowers bisexual; both calyx and petals present | | | | | |
| | | | | 2. <i>Apodytes</i> E. Mey. | |
| Flowers unisexual; 1 perianth-whorl present | | | | | |
| | | | | 3. <i>Pyrenacantha</i> Wight | |

4671 1. *CASSINOPSIS* Sond., in Harv. & Sond., Fl. Cap., vol. 1, p. 473 (1860)

Calyx small, campanulate or lobed to the base; lobes 5, ovate. *Petals* 5, rarely somewhat connate at the base, longer than the calyx, valvate. *Stamens* 5, alternating with the petals and often about as long; filaments subterete; anthers dehiscent by longitudinal slits. *Disc* 0. *Ovary* sessile, 1-chambered, usually with 2 pendulous unequal ovules, more rarely ovule solitary; style simple, sometimes sublateral; stigma simple or obscurely lobed. *Fruit* a nearly dry subglobose drupe, with a woody endocarp, 1-locular, 1-seeded. *Seed* compressed; embryo minute; endosperm copious, fleshy.

Glabrous shrubs, often spiny; leaves opposite, simple, elliptic or ovate, sometimes acuminate, with entire or sparsely toothed margins; inflorescence an axillary dichotomous panicle; flowers small.

Species 4, natives of Madagascar and South Africa; 2 species recorded from the Transvaal and extend through Zululand and Natal to the Swellendam district; also recorded from the Queenstown district. (Type: *C. ilicifolia* (Hochst) O. Kuntze)

4686 2. *APODYTES* E. Mey. ex Bernh., in Linnaea, vol. 12, p. 136 (1838)

Calyx saucer-shaped, small, minutely 5-toothed. *Petals* 5, free or united, valvate, when united then the tube tubular and the lobes ovate-oblong. *Stamens* 5, slightly cohering at the base with the petals or fixed to the corolla-tube, about as long as the petals; filaments somewhat thick or linear; anthers oblong or linear. *Ovary* 1-chambered, with 2 pendulous ovules; style terete, excentric or oblique, often more or less incurved; stigma small. *Fruit* a drupe, obliquely ellipsoid or orbicular, often with the remains of the style on one side at the base. *Seed* pendulous; embryo small; endosperm fleshy.

Shrubs or trees; leaves alternate, rarely a few opposite, simple, petioled, elliptic or lanceolate, rarely obovate, often shining; inflorescence a terminal or axillary cymose corymb or panicle; flowers small.

Species about 20, mostly African, but a few species found in Java and Indo-China; 1 species occurs in South Africa and extends from the Transvaal, Zululand, and Natal, through the coastal belt to the Swellendam district. (Type: *A. dimidiata* E. Mey.)

4709 3. *PYRENACANTHA* Wight, in Hook. Bot. Misc., vol. 2, p. 107 (1831)

Plants dioecious. *Perianth* simple, 4- (rarely 3—5-) parted, valvate. *Male flowers*:—*Stamens* 4, more rarely 3 or 5, shorter than the perianth; filaments

linear, about as long as the anthers; anthers linear. *Rudimentary ovary* present. *Female flowers*:—*Perianth* as in the male. *Stamens* 0. *Ovary* globose, 1-chambered, with 2 ovules, villous; stigma sessile, of a number of radiating lobes. *Fruit* a drupe; endocarp woody with projecting pegs from the inner walls. *Seed* solitary; cotyledons flat; radicle swollen; endosperm copious, consisting of a number of plates with cavities into which the projections from the endocarp wall fit.

Climbing shrubs; leaves alternate, petioled, ovate, elliptic, or lanceolate, sometimes acuminate, sometimes cordate at the base, with entire or toothed or lobed margins; male inflorescence a long spike; female inflorescence a short oblong few-flowered or subcapitate spike.

Species 29, all African; 2 species recorded from South Africa ranging from the northern Transvaal, Zululand, and Natal through the coastal belt to the Swellendam district. (Type: *P. volubilis* Wight)

106. SAPINDACEAE

Plants often dioecious or monoecious. *Flowers* sometimes all bisexual, irregular or regular. *Calyx* usually with 5, sometimes 4, free sepals or sepals joined at the base. *Petals* usually 5, sometimes 4, rarely 0, mostly with a scale or other appendage on the inner face. *Disc* annular, cupular, or unilateral, rarely absent or indistinct. *Stamens* inserted inside the disc, 4—24, often 8; filaments free, often hairy; anthers 2-theous. *Ovary* superior, entire, lobed, or divided nearly to the base, 1—4- (usually 3-) chambered, with 1—2, rarely 3, usually axile ovules; style simple, rarely styles 2—4; stigma simple, more rarely lobed. *Fruit* a drupe or capsule, sometimes bladdery or of winged samarae. *Seed* usually solitary, often with an aril; cotyledons often unequal and with one embracing the other or sometimes spirally coiled; endosperm 0.

Trees or shrubs, rarely herbs or undershrubs, rarely climbers; leaves alternate, usually compound, more rarely simple; stipules 0; inflorescence a raceme or panicle, more rarely flowers solitary or in clusters.

Genera about 127; species over 1,000, found in tropical and subtropical countries.

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| 1. A herbaceous climber, with the peduncle of the inflorescence ending in tendrils | 1. <i>Cardiospermum</i> Linn. | 2 |
| Trees or shrubs, without tendrils | | |
| 2. Petals absent | 8. <i>Dodonaea</i> Linn. | |
| Petals present, sometimes small | | 3 |
| 3. Leaves simple | | 4 |
| Leaves pinnate | | 5 |
| 4. Disc unilateral | 2. <i>Allophylus</i> Linn. | |
| Disc annular | 6. <i>Pappea</i> E. & Z. | |
| 5. Fruit a bladdery capsule or of 3—1 winged samarae | | 6 |
| Fruit dry or somewhat fleshy, not as above | | 7 |
| 6. Fruits winged | 3. <i>Atalaya</i> Blume | |
| Fruit a bladdery capsule | 7. <i>Erythrophysa</i> E. Mey. | |
| 7. Leaf rhachis evidently winged | 9. <i>Hippobromus</i> E. & Z. | |
| Leaf rhachis not evidently winged | | 8 |

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|--|--------------------------------------|
| 8. Petals 4; disc unilateral | 2. <i>Allophylus</i> Linn. |
| Petals 5; disc not unilateral | 9 |
| 9. Flowers unisexual; stamens 12—20... | 4. <i>Deinbollia</i> Schum. & Thonn. |
| Flowers bisexual; stamens 6—10 ... | 5. <i>Smelophyllum</i> Radkl. |

4726 1. CARDIOSPERMUM Linn., Sp. Pl., ed. 1, p. 366 (1753)

Plants dioecious, with occasional bisexual flowers. *Flowers* irregular. *Sepals* 4—5, broadly imbricate; the 2 outer smaller. *Petals* 4—5, with 2 petaloid appendages, each with a hairy reflexed lobe near the apex. *Disc* unilateral, of 2 glands between the petals and the stamens. *Stamens* 8; filaments unequal, free or connate at the base, linear, hairy. *Ovary* sessile or stalked, sometimes 3-angled, 3-chambered, with a solitary axile ovule in each chamber, sometimes villous; style short, 3-fid or styles free. *Fruit* a 2—3-locular bladderly capsule, with a single seed in each loculus. *Seed* black, globose, with an arillus; testa woody; cotyledons fleshy, with the radicle bent back between the cotyledons.

Climbing herbaceous plants; leaves alternate, 3-foliate or decompose; leaflets lobed, toothed, or cut; inflorescence an axillary raceme or panicle; peduncle with a pair of tendrils at the summit or with abortive pedicels.

Species about 44, mostly found in tropical America; 2 species occur in South Africa, recorded from South West Africa, the Transvaal, Natal, and in the coastal belt to the Kei River mouth. (Type: *C. halicacabum* Linn.)

4734 2. ALLOPHYLUS Linn., Sp. Pl., ed. 1, p. 348 (1753)

(*Schmidelia* Linn.)

Plants dioecious, with occasional bisexual flowers. *Flowers* irregular. *Sepals* 4, in opposite pairs, imbricate; the 2 outer smaller. *Petals* 4, very often small, rarely 0, glabrous or bearded on the inner face. *Disc* unilateral, lobed, or of 4 glands, very rarely obsolete. *Stamens* 8, included or shortly exerted; filaments free, usually hairy. *Ovary* compressed or didymous, 2-chambered, with a single basal ovule in each chamber, often hairy; style 2—3-lobed or styles free. *Fruit* of 2 fleshy dry or leathery 1-locular carpels, sometimes only of 1 carpel. *Seed* erect, usually globose, usually with a very short arillus; cotyledons thick, fleshy, folded, with one embracing the other; radicle curved.

Trees or shrubs; leaves alternate 1—3- (rarely 5-) foliolate; leaflets often large, often discolorous, with entire or serrated margins; inflorescence an axillary simple raceme or lax panicle; flowers minute.

Species about 260, found in all tropical and subtropical countries, especially America; 7 or 8 species occur in South Africa and extend from the Transvaal, Zululand, and Natal to the Knysna district. (Type: *A. zeylanicus* Linn.)

4735 3. ATALAYA Blume, Rumphia, vol. 3, p. 186 (1847)

(*Diacarpa* Sim)

Sepals 5, suborbicular, imbricate; the outer sepals smaller than the inner. *Petals* 5, usually smaller than the inner sepals, with a hairy appendage on the inner face, ciliate. *Disc* fleshy, expanded at the base and with the margin slightly notched. *Stamens* 8, inserted within the disc; filaments hairy; anthers oblong. *Ovary* 3-chambered, 3-lobed and with each lobe narrowly winged, with a single ovule in each chamber; style very short; stigma simple. *Fruit* of 1—3 winged samarae, with the wings distinctly veined. *Seed* reddish brown, ellipsoid, with a papery testa; cotyledons fleshy, unequal, one embracing the other; radicle curved.

A small tree; leaves paripinnate, rarely simple; leaflets in 3—5 pairs, alternate or opposite, lanceolate, elliptic, or oblong-lanceolate, sometimes obliquely oblong-falcate, usually with entire margins; inflorescence a terminal panicle; flowers small.

Species about 7, natives of Africa, Australia, and Timor; 3 species described from South Africa and distributed from Zululand and Natal to the Port Elizabeth district.

4740 4. DEINBOLLIA Schum. & Thonn., in Danske. Selsk. Afhandl., vol. 4, p. 16 (1827)

(Under *Sapindus* Linn. in Fl. Cap.)

Plants dioecious. *Flowers* regular. *Male flowers*:—*Sepals* 5, orbicular, concave, in 2 rows, strongly imbricate, often hirsute. *Petals* 5, obovate, orbicular, or elliptic, about as long as the sepals, woolly or with scales on the inner face, often ciliate. *Disc* annular or cupular. *Stamens* 12—20, rarely only 8, inserted inside the disc; filaments short or long, linear, pilose; anthers linear-oblong, included. *Ovary* deeply 2—3-lobed or -partite to the base; each portion subglobose, 1-chambered, with a solitary basal ovule, often villous; style simple, thick, straight or twisted. *Fruit* separating into 2—3 berry-like mericarps. *Seeds* globose or ellipsoid, with a fleshy aril or a small basal cushion; cotyledons fleshy, unequal, with one embracing the other; radicle curved.

Trees; leaves alternate, abruptly or imparipinnate, often large, 2- to many-jugate; leaflets oblong or oblong-elliptic; inflorescence a short or long simple or branched raceme.

Species about 20, all African; 1 species found in South Africa and extends from Zululand, Natal to the East London district. (Type: *D. pinnata* Schum. & Thonn.)

4754 5. SMELOPHYLLUM Radkl., in Sitzber. Akad. München, vol. 8, p. 330 (1878)

(Under *Sapindus* Linn. in Fl. Cap.)

Flowers bisexual, regular. *Calyx* saucer-shaped; lobes small, ovate. *Petals* 5, slightly longer than the calyx, more or less quadrate, reflexed at the apex, each with a thick appendage which is longer than the petal itself. *Disc* cupular. *Stamens* 6—10; filaments subterete; anthers oblong. *Ovary* 2—3-chambered, with a solitary basal ovule in each chamber; style short, thick; stigma simple. *Fruit* 2-lobed, with a fleshy pericarp. *Seed* without an axil.

A tree; leaves alternate, petioled, abruptly pinnate; leaflets in 3—4 pairs, obtusely toothed, undulate on the margins; inflorescence an axillary panicle, shorter than the leaves.

Endemic; species 1, recorded from the Port Elizabeth, Humansdorp, and Uniondale districts. (Type: *S. capense* (Sond.) Radkl.)

4784 6. PAPPEA E. & Z., Enum., p. 53 (1835)

(Under *Sapindus* L. in Fl. Cap.)

Plants dioecious. *Flowers* regular. *Male flowers*:—*Calyx* small, cupular or saucer-shaped; lobes small, ovate. *Petals* 4—6, about as long as the calyx, villous within. *Disc* small, annular. *Stamens* 8—10, inserted within the disc; filaments villous; anthers oblong. *Rudimentary ovary* 0. *Female flowers*:—*Calyx*, *petals* and *disc* as in the male. *Stamens* present but functionless. *Ovary* 2—3-lobed, 2—3-chambered, with a solitary ovule in each chamber, hirsute; style short, thick; stigma simple. *Fruit* didymous or 3-lobed or only one loculus developed, usually globose. *Seed* globose, with a basal circular

depression (arillus?); cotyledons thick, fleshy, with one partially embracing the other; radicle curved.

Trees or large shrubs; leaves alternate, usually petioled, simple, oblong or obovate, entire, often crowded at the apex of the branches; inflorescence a panicle or raceme; the male equalling or longer than the leaves; the female shorter than the leaves; flowers small.

Species 6, all African; 2 species in South Africa recorded from Namaqualand, the Transvaal, Zululand, and Natal to the Riversdale district; also recorded from the Oudtshoorn and Willowmore districts. (Type: *P. capensis* E. & Z.)

4826 7. ERYTHROPHYSA E. Mey., in Drège Zwei Pflanzengeogr. Dokum., p. 183 (1843)

Flowers bisexual. *Calyx* campanulate or lobed almost to the base, somewhat oblique at the base; segments elliptic. *Petals* 4, with a long terete claw; limb oblong, obtuse, hooded at the base and furnished with a short petaloid toothed and crested but beardless scale or with a large 3-lobed appendage. *Disc* cup-shaped or flat. *Stamens* 8, inserted in a bundle beneath a fleshy gland at one side of the flower where the fifth petal is deficient; filaments exerted, subterete, hairy; anthers versatile. *Ovary* stalked, 3-angled, 3-chambered, with 2 ovules in each chamber, sometimes glandular; style short, blunt; stigma simple. *Fruit* an inflated beaked bladder, of 3 dorsally winged valveless carpels connate by their inner faces. *Seed* solitary, purple or black, about the size of a pea, globose; testa woody; cotyledons thick, fleshy; radicle stout; arillus 0.

Shrubs; leaves alternate, imparipinnate, crowded near the ends of the branches; leaflets in 5—12 pairs, elliptic or linear; leaf-rhachis narrowly or evidently winged; inflorescence a racemose corymb or panicle; flowers red, medium-sized.

Species 3; 1 species found in Madagascar; 2 species in South Africa, recorded from Namaqualand and the Transvaal. (Type: *E. undulata* (Arn.) E. Mey.)

4831 8. DODONAEA Linn., Mant., vol. 2, p. 149 (1771)

Plants dioecious or sometimes monoecious. *Male flowers*:—*Sepals* 2—5-parted, imbricate or valvate. *Petals* 0. *Disc* obsolete. *Stamens* 5—8; filaments much shorter than the anthers; anthers oblong or linear-oblong, sometimes with a blunt mucro. *Ovary* rudimentary. *Female flowers*:—*Perianth* as in the male. *Disc* small or obsolete. *Staminodes* present. *Ovary* sessile, 3—6-angled, 3—6-chambered, with 2 axile ovules in each chamber; style 3—6-angled and 3—6-fid at the apex or style thick, terete, undivided. *Fruit* a membranous capsule, 2—6-angled, with the angles acute obtuse or winged, septically 2—6-valved, with 1—2 seeds in each loculus. *Seeds* lenticular or subglobose, compressed; cotyledons linear or oblong and acuminate, spirally coiled or curved.

Trees or shrubs, often viscid; leaves alternate, simple (in the South African species) or abruptly pinnate; inflorescence an axillary or terminal raceme, corymb or panicle.

Species about 82, mostly Australian; 2 species in South Africa, recorded from Namaqualand, the Transvaal, Natal, and in the coastal belt to the south-western regions of the Cape Province; also occurs in the Karoo region.

4836 9. HIPPOBROMUS E. & Z., Enum., p. 151 (1836)

Flowers dimorphic. *Calyx* of 5 unequal sepals; each either elliptic or spatulate, concave, fimbriate or ciliate on the margins. *Petals* 5, shorter than the sepals, obovate, without scales, imbricate. *Disc* thick, annular. *Stamens* 8, inserted within the disc, longer than the calyx; filaments terete;

anthers oblong. *Ovary* subglobose, 3-chambered, with 1—2 ovules in each chamber; style short, thick; stigma clavate, 3-angled. *Fruit* globose, obscurely 3-lobed, 3-locular, 1- (rare 2-) seeded. *Seed* black, flattened on two faces, without an aril; cotyledons obovate, flat.

A resiniferous tree; leaves alternate, abruptly pinnate; leaflets sessile, subopposite, obovate or oblong-obovate, toothed, serrated, or entire; inflorescence a densely flowered panicle; flowers subglobose, velvety.

Endemic; species 1, ranging from the Transvaal and Natal to the Port Elizabeth and Humansdorp districts. (Type: *H. pauciflorus* (L.) Radlk. = *H. alata* E. & Z.)

NOTE.—The flowers at first sight appear to be male and bisexual. In the one type of flower there is a small ovary which is 3-chambered and has ovules, but whether the ovules develop cannot be stated. In the other type the ovary is more developed and the anthers contain pollen.—E. P. P.

107. MELIANTHACEAE

Flowers regular or irregular, bisexual, sometimes with occasional male or female flowers on different plants. *Sepals* 5, free or connate at the base, sometimes gibbous at the base. *Petals* 5 or 1 aborted, sessile or on long claws, imbricate. *Disc* unilateral and variously adnate to the sepals or cupular and lobed, or semi-annular, or of distinct segments. *Stamens* 4—10, inserted inside the disc, free or connate; anthers 2-theous. *Ovary* superior, usually lobed, 4—5-chambered, or 1-chambered, with 1—2 ovules in each chamber or many parietal ovules when ovary is 1-chambered; style simple; stigma simple or globose. *Fruit* a capsule. *Seed* with or without an aril; embryo straight; endosperm present.

Trees or shrubs, sometimes undershrubs; leaves alternate, simple or imparipinnate; stipules present or absent; inflorescence a terminal or axillary raceme.

Genera 3, species about 67, all African.

- | | | | | | |
|---|-----|-----|-----|--------------------------------|---|
| 1. Leaves simple ... | ... | ... | ... | 3. <i>Greyia</i> Hook. & Harv. | |
| Leaves pinnate | ... | ... | ... | ... | 2 |
| 2. Filaments connate; ovary chambers with 1 ovule in each | | | | | |
| 1. <i>Bersama</i> Fres. | | | | | |
| Filaments free; ovary-chambers with 2—4 ovules in each | | | | | |
| 2. <i>Melanthus</i> Linn. | | | | | |

4853 1. BERSAMA Fres., in Mus. Senkenberg., vol. 2, p. 280, t. 17 (1837)

(Natalia Hochst.)

Flowers bisexual, or bisexual with occasional male or female flowers on different plants. *Sepals* 5, subequal, free or connate at the base, usually hairy. *Petals* 5, unequal, often clawed, sometimes with appendages, usually tomentose without. *Disc* unilateral or semi-annular. *Stamens* usually 4, rarely 5, inserted inside the disc; filaments connate, hairy; anthers 2-theous. *Ovary* 4—5-chambered, with a solitary erect ovule in each chamber, villous; style simple, often hairy below; stigma globose or subglobose. *Fruit* a globose or ellipsoid leathery or woody capsule, often covered with protuberances, 4—5-locular, 4—5-valved, with a single seed in each loculus. *Seed* black or reddish, with a yellow waxy arillus, subglobose, sometimes with a keel, sometimes angled; testa smooth or wrinkled, often hard; embryo straight; cotyledons flat, endosperm horny or fleshy.

Trees or shrubs; leaves alternate, petioled, imparipinnate; leaflets 2- to many-jugate, oblong-lanceolate, ovate-oblong, elliptic, obovate, ovate-lanceolate,

sometimes acuminate, with entire or toothed margins; inflorescence sessile or peduncled, a terminal or lateral raceme, dense or lax.

Species about 58, all African; 6 species occur in South Africa and extend from the northern Transvaal, Zululand, and Natal to the Komgha district. (Type: *B. abyssinica* Fres.)

4854 2. MELIANTHUS Linn., Sp. Pl., ed. 1, p. 639 (1753)

Flowers bisexual. *Calyx* 5-partite, compressed, unequal, with or without a saccate gibbosity at the base, hairy within and without. *Petals* clawed, rarely a fifth petal present; lamina spatulate or elliptic, usually distinctly veined; claw hairy. *Disc* large, unilateral, variously adnate to the sepals. *Stamens* 4, inserted inside the nectary, didymous; filaments free. *Ovary* 4-lobed, 4-chambered, with 2—4 ovules in 2 rows in each chamber; style persistent, usually hairy at the base. *Fruit* a membranous woody or leathery capsule, 4-lobed or 4-winged, glabrous or hairy. *Seeds* black, shining, without an arillus; embryo straight; cotyledons flat; endosperm horny.

Shrubs or undershrubs, often strongly scented; leaves alternate, imparipinnate, sometimes large; leaflets with unequal sides, toothed, glabrous or hairy; stipules present; inflorescence a raceme, with a solitary flower or 2—4 flowers at each node; flowers often large.

Endemic; species 6, extending from the Transvaal, Zululand, and Natal, through the coastal belt to Namaqualand and South West Africa; also found in the central and north-western districts of the Cape Province. (Type: *M. major* Linn.)

4855 3. GREYIA Hook. & Harv., in Proc. Dublin Univ. Zool. & Bot. Assoc., vol. 1, p. 138, t. 13 (1859)

Flowers bisexual. *Calyx* 5-partite, persistent; segments oblong, imbricate. *Petals* 5, longer than the sepals, oblong, glandular-ciliate on the margins, imbricate. *Disc* fleshy, basin-shaped, 10-lobed, with the lobes alternating with the stamens and with a large gland at the apex or disc of 8 large oblong structures lobed at the apex and without glands. *Stamens* 10, longer than the petals, inserted between the disc and the ovary, subhypogynous, in 2 rows; filaments subterete; anthers with longitudinal dehiscence. *Ovary* oblong in outline, deeply 5-furrowed, 1-chambered, with many small ovules on parietal placentas (the ovary apparently 5-chambered due to the intrusion of the placentas). *Fruit* a subcylindric 5-grooved septicidal capsule. *Seeds* very small; embryo basal; endosperm fleshy.

Small trees or shrubs; leaves alternate, petioled, simple, subrotund, crenate-lobed; petiole dilated at the base; stipules 0; inflorescence a terminal pedunculate raceme; flowers red, showy; bracts small, lanceolate.

Endemic; species 3, extending from the northern Transvaal, Zululand, and Natal to the Komgha district; also recorded from the Queenstown district. (Type: *G. sutherlandi* Hook. & Harv.)

NOTE.—J. Hutchinson, *The Families of Flowering Plants*, has proposed a new family (Greyiaceae) for this genus.—E. J. P.

108. BALSAMINACEAE

Flowers bisexual, zygomorphic. *Sepals* 3—5, usually coloured, with the lowermost produced into a spur or bag. *Petals* 3—5, usually more or less connate; the anterior petal larger than the others. *Stamens* 5; filaments broadened above and connate, linear and free below; anthers 2-theous, connate. *Ovary* superior, 5-chambered, with 2—3 or many ovules in each chamber; style 0; stigma simple, 5-toothed or -lobed. *Fruit* a capsule,

opening elastically into 5 twisted valves, rarely a berry. *Seed* glabrous or hairy; embryo straight; endosperm 0.

Succulent herbs, rarely shrubby at the base, usually found in damp places; leaves opposite or alternate, sometimes radical, entire or variously toothed; stipules 0; flowers often showy, 1 to many on axillary peduncles which are either solitary or clustered; inflorescence sometimes a panicle.

Genera 2; species about 400, found in all tropical and subtropical countries.

4856

IMPATIENS Linn., Sp. Pl., ed. 1, p. 937 (1753)

Sepals 3, rarely 5, imbricate; the 2 lateral usually green, flat; the posterior large, petaloid, hooded, produced into a hollow spur or sac. *Petals* 3—5; the anterior petal large; the lateral petals 2-lobed, usually connate. *Stamens* 5; filaments linear and free at the base, expanded and connate above; anthers large, elliptic, cohering. *Ovary* with few to many ovules in each chamber; style 0; stigma 5-toothed or of 5 linear lobes, or simple. *Fruit* somewhat membranous; valves 5, elastically springing away from a placentiferous axis. *Seeds* smooth or tuberculed, glabrous or hairy.

Herbs, rarely shrubby at the base; leaves opposite or alternate, rarely whorled or radical, simple, usually petioled, sometimes large, serrate or crenate on the margins; stipules 0; flowers in scapes or on axillary or terminal 1—2- to many-flowered peduncles.

Species between 300 and 400, chiefly natives of Africa and tropical Asia; 2 species in South Africa found in damp places in the Transvaal, Natal, and through the coastal belt to the Humansdorp, George, and Knysna districts. (Type: *I. nolitangere* Linn.)

109. RHAMNACEAE

Flowers bisexual, more rarely bisexual with occasional male or female flowers on different plants. *Calyx-tube* tubular, obconic, urceolate, or campanulate, free or more or less adnate to the ovary; lobes 4—5, valvate, often keeled on the inner face. *Petals* 4—5 or 0, inserted in the throat of the calyx-tube or on the outer margin of the disc, usually small, concave or flat, sessile or clawed, often embracing the stamens. *Disc* perigynous, rarely 0, lining the calyx-tube and not very evident, or thick and evident, sometimes angled. *Stamens* 4—5, inserted with the petals and opposite to them; filaments usually linear, rarely dilated; anthers 2-theous. *Ovary* sessile, superior or more or less inferior, 2—3-, rarely 4-, chambered, with 1, rarely 2, basal ovules in each chamber. *Fruit* a drupe, capsule, often 3-coccus, free, partly or wholly enclosed in the persistent calyx-tube. *Seed* solitary in each fruit loculus; embryo straight; cotyledons flat; endosperm fleshy, often scanty, rarely 0.

Trees or shrubs, rarely herbs, erect or scandent, often spiny; leaves alternate, more rarely opposite, simple, entire or serrated, stipules usually present; inflorescence a cyme, umbel, spike, or head; flowers small.

Genera 51; species over 600, natives of warm and tropical countries.

- | | | | |
|---|-----|--------------------|---|
| 1. Climbing plants with tendrils | ... | 7. Helinus E. Mey. | |
| Shrubs or small trees, if a few tendrils developed then leaves not ovate and subcordate at the base | ... | ... | 2 |
| 2. Fruit a dry or fleshy drupe | ... | ... | 3 |
| Fruit a capsule | ... | ... | 7 |
| 3. Leaves opposite, subopposite, or approximating in pairs... | ... | ... | 4 |
| Leaves alternate | ... | ... | 5 |

4. Inflorescence a short axillary umbel; spines usually present
 3. *Scutia* Comm.
 Inflorescence an axillary raceme or cyme; spines absent
 4. *Rhamnus* Linn.
5. Leaves palmately veined 1. *Ziziphus* Mill.
 Leaves pinnately veined 6
6. Leaves with entire or remotely toothed margins
 2. *Berchemia* Neck.
 Leaves closely and finely toothed ... 4. *Rhamnus* Linn.
7. Disc not evident; inflorescence a terminal and axillary lax panicle
 5. *Noltia* Reichb.
 Disc evident; inflorescence a spike, raceme, or capitulum or flowers
 solitary 8
8. Inflorescence a raceme, spike or head very rarely flowers solitary; style
 simple 6. *Phyliza* Linn.
 Flowers axillary solitary; style 3-partite 8. *Marlothia* Engl.

4861 1. ZIZIPHUS Mill., Gard. Dict. Abridg., ed. 4 (1754)
 (*Zizyphus* Adans.)

Flowers bisexual. *Calyx* 5-fid; lobes spreading, ovate, keeled within. *Petals* 5, shorter than the sepals, spatulate, concave, usually clawed, sometimes with a row of short deflexed hairs within, rarely petals absent. *Disc* flat, 5- or 10-angled, expanded, adhering to the calyx-tube. *Stamens* 5, inserted outside the disc, reflexed, included or exserted; filaments subterete. *Ovary* superior, immersed in the disc, 2-chambered, rarely 3- or 4-chambered, with a basal ovule in each chamber; styles 2—3, free or connate; stigma papillose. *Fruit* a drupe, sometimes the size of a large cherry, sometimes 2-locular; endocarp woody. *Seed* usually solitary, suborbicular or elliptic, compressed; embryo straight; cotyledons thick, suborbicular or elliptic; endosperm scanty, or none.

Trees or shrubs; sometimes decumbent or with long underground stems, often spiny; leaves alternate, petioled, entire or toothed, palmately veined; inflorescence a short axillary cyme; flowers small.

Species about 138, natives of Africa, tropical America, Australia, and the Mediterranean region; 3 species, possibly 4, in South Africa, extending from the Transvaal and Natal to the Albany district; also recorded from several of the central districts, the Orange Free State, Bechuanaland, and South West Africa.

4868 2. BERCHEMIA Neck., Elem., vol. 2, p. 122 (1790)

Calyx 5-parted; segments ovate, with a keel on the inner face. *Petals* 5, shorter than the calyx, clawed, spatulate, concave. *Disc* tumid. *Stamens* 5, as long as the petals, inserted on the outside of the disc; filaments linear. *Ovary* immersed in the disc, 2-chambered, with a solitary basal ovule in each chamber; style thick, conical, 2-lobed; stigma glandulose. *Fruit* a drupe, ellipsoid, 2-locular; endocarp woody. *Seed* often solitary; embryo straight; cotyledons flat; endosperm 0.

Unarmed shrubs or small trees; leaves alternate, petioled, elliptic, sometimes acuminate, entire, penninerved; inflorescence a small axillary cyme or a terminal raceme of cymes.

Species about 42, mostly found in Japan, China, and the Philippine Islands; 1 species recorded from South West Africa, Ngamiland, Bechuanaland, and the Transvaal.

NOTE.—The South African plant placed in this genus only differs from *Ziziphus* in being unarmed.—E. P. P.

4874 3. SCUTIA Comm. ex Brong., Ann. Sc. Nat., vol. 10, p. 362
(1827)

Flowers bisexual. *Calyx* somewhat fleshy; tube urceolate or campanulate; lobes 5, erect, keeled on the inner face. *Petals* 5, shortly clawed, shorter than the calyx-lobes, erect, flat, or cucullate. *Disc* lining the calyx-tube not very evident. *Stamens* 5, subequalling the petals; filaments linear, about as long as the anthers. *Ovary* superior, 2—4-chambered, with a solitary ovule in each chamber; style short, simple or faintly 2—3-fid. *Fruit* an ovoid or subglobose dry or somewhat fleshy drupe, 2-locular, surrounded at the base by part of the calyx-tube which is saucer-shaped. *Seed* usually solitary; embryo straight; cotyledons flat, somewhat obcordate; endosperm thin or 0.

Unarmed or spiny shrubs; leaves opposite, subopposite, or approximating in pairs, shortly petioled, simple, entire or toothed; stipules minute, deciduous; inflorescence an axillary simple umbel, slightly longer than the petioles.

Species 14, natives of Africa, Madagascar, and Brazil, but found in most tropical countries; 1 species in South Africa, extending from the Transvaal, Zululand, and Natal to the south-western districts of the Cape Province. (Type: *S. indica* Brongn. = *S. myrtina* (Burm. f.) Kurz.)

4875 4. RHAMNUS Linn., Sp. Pl., ed. 1, p. 193 (1753)

Flowers bisexual or bisexual with occasional male or female flowers on different plants. *Calyx* urceolate or flat; lobes 4—5, erect or spreading, keeled on the inner face. *Petals* 4—5 or 0, cucullate or flat. *Disc* lining the calyx-tube and not very evident or thick and annular. *Stamens* 4—5, shorter than the calyx-lobes; filaments about as long or a little longer than the anthers. *Ovary* superior, sometimes immersed in the disc, 2—4-chambered, with a solitary ovule in each chamber; styles 2—4, free or joined. *Fruit* a fleshy or dry drupe, globose or oblong in outline. *Seed* obovate in outline; embryo straight; cotyledons flat; endosperm scanty.

Small trees or shrubs; leaves alternate or opposite, simple, petioled, entire or toothed, penninerved; stipules small, usually deciduous; inflorescence an axillary raceme or cyme.

Species about 260, natives of warm and temperate Europe, Asia, America, Africa, Australia, and the Pacific Islands; 2 species in South Africa extending from the Transvaal, Zululand, and Natal to the Riversdale district; also found in some of the central districts. (Type: *R. cartharticus* Linn.)

4880 5. NOLTIA Reichb., Consp., p. 145 (1828)

(*Noltea* Reichb.)

Flowers bisexual. *Calyx-tube* broadly campanulate; lobes 5, ovate, about as long as the tube. *Petals* 5, shorter than the calyx, cucullate, sessile, embracing the stamens. *Disc* not evident. *Stamens* 5; filaments linear-lanceolate. *Ovary* with the lower portion adnate to the calyx-tube, 3-chambered, with a single ovule in each chamber; style simple, shortly 3-lobed at the apex. *Fruit* spherical, a capsule, adhering to the saucer-shaped persistent portion of the calyx-tube at the base, 3-locular; valves with a keel on the upper portion, separating septically from a 3-partite central axis. *Seed* black, convex on one face, flattened and with a keel on the other face; testa hard and woody; embryo straight; cotyledons flat; endosperm copious.

A glabrous shrub; leaves discolorous, alternate, shortly petioled, elliptic or oblong, penninerved, with serrated margins; stipules 0; inflorescence a terminal and axillary lax panicle; flowers small.

Endemic; species 1, extending from Natal to the Cape. (Type: *N. africana* (L.) Reichb.)

4886

6. *PHYLICA* Linn., Sp. Pl., ed. 1, p. 195 (1753)

Flowers bisexual. *Calyx-tube* cyathiform, campanulate, urceolate, cylindric, or obconic, terete or more or less pentangular, partly or entirely clothed outside with persistent or glabrous hairs or glabrous within and without, rarely pubescent within; lobes erect-spreading, ovate, deltoid, lanceolate, or linear, acute or acuminate, often with a prominent median nerve or keel on the inner face. *Disc* usually distinct, entire, lining the base or side of the calyx-tube or fleshy and almost filling the calyx-tube, occasionally annular. *Petals* 5, rarely fewer or absent, small, usually cucullate, clawed. *Stamens* 5, inserted immediately below the petals, filaments very short; anthers 1—2-theous. *Ovary* inferior, 3-chambered with a solitary ovule in each chamber; style simple; stigma minutely 3-lobed or pulvinate. *Fruit* mostly capsular, mostly crowned with the persistent base of the calyx. *Seed* more or less 3-sided, smooth; funicle short, dilated into a lobed aril embracing the base of the seed; embryo straight; cotyledons flat; endosperm present.

Undershrubs, shrubs, or rarely small trees; leaves alternate, simple, shortly petioled, ovate, lanceolate, or linear, with revolute margins; stipules rarely present; inflorescence a spike, raceme, or capitulum, or flowers axillary and solitary.

Species about 150, found in Africa, Madagascar, and the Island of Tristan da Cunha; 143 species in South Africa, mostly massed in the south-western regions of the Cape Province; 2 species found in Natal. (Type: *P. ericoides* Linn.)

4905

7. *HELINUS* E. Mey. ex Endlicher Gen., p. 1102 (1840)

Flowers bisexual. *Calyx-tube* campanulate; lobes 5, ovate, slightly keeled on the inner face. *Petals* 5, about as long as the calyx-lobes, cucullate, inserted on the margin of the disc. *Disc* epigynous, flat, completely filling the calyx-tube. *Stamens* 5, equalling the petals; filaments linear. *Ovary* inferior, 3-chambered, with a single ovule in each chamber; style short, 3-fid. *Fruit* obovoid-globose, areolate at the apex, 3-coccus; cocci at length dehiscent, with a 3-partite central axis. *Seeds* black, somewhat plano-convex with a keel on the flat face; embryo straight; cotyledons flat, obovate; endosperm fleshy.

Climbing shrubs furnished with tendrils; leaves simple, alternate, petioled, usually ovate, cordate or subcordate at the base; stipules linear, deciduous; inflorescence a peduncled axillary umbel; flowers small.

Species 5, natives of Africa, Madagascar, and India; 1 species in South Africa, extending from the Transvaal, Zululand, and Natal to the Uitenhage district. (Type: *H. ovatus* E. Mey.=*H. scandens* (E. & Z.) A. Rich.)

4907 8. *MARLOTHIA* Engl., in Engl. Bot. Jahrb., vol. 10, p. 39 (1888)

Flowers bisexual. *Calyx-tube* campanulate; lobes 5, spreading, ovate, sub-acute, keeled on the inner face. *Petals* 5, about as long as the calyx-lobes, inserted on the margin of the disc, concave, embracing the stamens. *Disc* flat, completely filling the calyx-tube, somewhat 5-angled. *Stamens* 5, inserted on the margin of the disc; filaments subterete. *Ovary* inferior, 2—3-chambered, with a single basal ovule in each chamber; style 3-partite. *Fruit* and *seed* as in *Helinus*.

An undershrub with long, slender, remotely leafy branches; leaves simple, alternate, shortly petioled, linear or linear-lanceolate; stipules small; flowers axillary, solitary or 3-nate, on short peduncles.

Endemic; species 1, recorded from South West Africa, Bechuanaland, and the Kuruman district. (Type: *M. spartioides* Engl.)

NOTE.—In floral structure and fruit this is similar to the genus *Helinus* E. Mey. It differs in habit, being a non-climber, though in one specimen examined (*Schoenfelder* in National Herbarium No. 27158) tendrils were present.—E. P. P.

110. HETEROPYXIDACEAE

Flowers bisexual, regular. *Calyx* persistent, gland-dotted; tube cup-shaped; lobes 5, shorter than the tube, ovate, obtuse. *Petals* 5, inserted in the mouth of the calyx, obovate, gland-dotted. *Disc* lining the lower half of the calyx-tube. *Stamens* 5, opposite the petals, about as long or much shorter than the petals; filaments terete, sometimes shorter than the anthers; anthers 2-theccous. *Ovary* superior, globose, 2—3-chambered, with many axile ovules on a swollen placenta, glandular; style simple, persistent in fruit; stigma capitate. *Fruit* a small capsule, 2—3-locular, partly included in the persistent calyx. *Seeds* brown, few, slightly curved, 3-angled; testa reticulated; embryo almost straight; cotyledons flat, oblong; endosperm 0.

Small trees; leaves alternate, simple, shortly petioled, linear-lanceolate, lanceolate, or obovate-oblong, entire, gland-dotted; stipules 0; inflorescence a terminal panicle; flowers small.

Genus 1; species 2, probably 3, all African.

4908a HETEROPYXIS Harv., *Thes. Cap.*, vol. 2, p. 18, t. 128 (1863)

Characters of the family.

Recorded from the Transvaal, Swaziland, Zululand, and Natal. (Type: *H. natalensis* Harv.)

NOTE.—The exact systematic position of this genus has been much disputed. (Harvey (loc. cit.) has a note on its affinity and places it in the family *Lythraceae* and discusses its affinities with *Myrsinaceae* and *Rhamnaceae*. Hallier (*Abh. Naturw. Ver. Hamburg*, vol. 18, p. 89, 1903) places it in the *Myrtaceae* as allied to the genus *Metrosideros*. Bentham and Hooker (*Gen. Plant.*, vol. 1, p. 785) regard it as an anomalous genus in the family *Lythraceae*, while Engler (*Pflanzenfam. Nachtrage*, p. 335) suggests an affinity with *Rutaceae* of which it is perhaps a subfamily. Hutchinson, *The Families of Flowering Plants*, places it in a separate family in the order *Rhamnales*.—E. P. P.

111. VITACEAE

Plants sometimes monoecious. *Flowers* usually all bisexual, regular. *Calyx* small, entire or 4—5- (rarely 3—7-) toothed. *Petals* 4—5, seldom 3—7, free or cohering, valvate, caducous. *Disc* various, between the stamens and the ovary, sometimes adnate to the petals or stamens or ovary. *Stamens* 4—5, seldom 3—7, opposite the petals, inserted on the outside of the disc. *Ovary* superior, often immersed in the disc, 2—8-chambered with 1—2 ovules in each chamber; style short or elongated or 0; stigma capitate or discoid or simple. *Fruit* a berry, 1—8-locular, with 1—2 seeds in each loculus. *Seeds* erect; embryo straight, small in relation to the size of the seed; cotyledons usually flat; endosperm cartilaginous, sometimes ruminant.

Trees or shrubs, often scandent and furnished with tendrils; stems woody or succulent; leaves alternate, simple or palmately 3—5-foliate, more rarely pinnate; stipules present or 0; inflorescence opposite the leaves, a spike, raceme, panicle, or a cyme; flowers small.

Genera 12, species over 500, natives of tropical and warm temperate countries.

Petals 5	...	...	...	...	1. <i>Rhoicissus</i> Planch.
Petals 4	...	...	...	...	2. <i>Cissus</i> Linn.

4917 1. RHOICISSUS Planch., in *DC. Monogr. Phan.*, vol. 5, p. 463 (1887)

(*Cissus* Linn. in *Fl. Cap.* partly)

Flowers usually bisexual, usually 5-merous, more rarely 4—7-merous. *Calyx* small, saucer-shaped, scarcely lobed. *Petals* often thickened, longer

than the calyx, ovate. *Disc* thick, saucer-shaped, adnate to the ovary, usually hairy. *Stamens* 5; inserted on the outside of the disc; filaments usually flattened. *Ovary* immersed in the disc, 2-chambered, with basal ovules in each chamber; style short, usually conical; stigma simple. *Fruit* a 1—4-seeded berry. *Seeds* subglobose or more or less obovoid in general shape, convex on one side and usually with two flat faces and keeled on other side; testa woody; embryo straight, small in relation to the size of the seed; cotyledons flat; endosperm cartilaginous.

Climbing shrubs; leaves alternate, usually palmately compound with 3 leaflets, rarely leaflets 5, more rarely simple; leaves or leaflets suborbicular, oblong, linear, or obovate, often toothed or lobed.

Species 17, all African; 7 species occur in South Africa, extending from the Transvaal, Zululand, and Natal to the Cape.

4918

2. CISSUS Linn., Sp. Pl., ed. 1, p. 117 (1753)

Flowers bisexual; sometimes unisexual flowers on the same plant. *Calyx* small, usually saucer-shaped, very shortly 4-lobed or scarcely lobed. *Petals* 4, somewhat fleshy, ovate, usually cucullated at the tip. *Disc* tumid or flat, more or less 4-lobed or of 4 large fleshy plates, adnate to the ovary. *Stamens* 4, inserted on the outside of the disc; filaments flattened or terete. *Ovary* 2-chambered, with 2 basal ovules in each chamber; style short, conical or terete; stigma simple, often truncate. *Fruit* a berry, sometimes shortly 4-winged, sometimes hairy. *Seed* variously shaped; embryo straight, small in relation to the size of the seed; testa often woody; cotyledons flat or somewhat folded, often cordate at the base; endosperm with 2 longitudinal cavities into which a fold of the testa fits.

Climbing plants, furnished with tendrils, sometimes with succulent stems, often with a large woody or succulent rootstock; leaves sometimes large, simple, usually petioled, simple or 3-foliolate, more rarely 5-foliolate or pinnately compound; leaves or leaflets ovate, elliptic, linear, or obovate, sometimes cordate, entire or variously toothed or cut; stipules present or absent; inflorescence a cyme; flowers small.

Species over 300 found in all tropical countries; about 38 species in South Africa, widely distributed but absent from the south-western districts of the Cape Province. (Type: *C. vitifolia* Linn.)

112. TILIACEAE

Flowers regular, bisexual, rarely unisexual. *Sepals* 5, rarely 3—4, free or connate, often valvate. *Petals* free, equalling the number of sepals and alternating with them, rarely 0, often with a gland or appendage at the base, imbricate or valvate. *Stamens* indefinite, rarely subdefinite, often on a distinct torus, free or sometimes connate at the base, all fertile or the outer sterile; filaments filiform or linear; anthers 2-theous. *Ovary* superior, 2—10-chambered, with 1 to many ovules in each chamber; style entire or lobed at the apex or the stigmas almost free. *Fruit* a dry or fleshy capsule. 2—10-locular or 1-locular by abortion, sometimes transversely divided between the seeds, with 1 to many seeds in each loculus. *Seeds* ascending, pendulous or transverse; embryo straight; endosperm fleshy or horny.

Trees or shrubs, rarely herbs; leaves alternate, very rarely opposite or sub-opposite, simple, entire, toothed, or lobed; stipules in pairs, usually small and deciduous, rarely large and persistent; inflorescence often a cyme, with the cymes sometimes in corymbs or panicles or flowers axillary and terminal.

Genera 44, with about 500 species, widely dispersed especially in the tropics.

1. Outer stamens sterile; filaments moniliform
 2. *Sparmannia* Linn. f. ... 2
 - Stamens all fertile ... 2
2. Sepals hooded at apex and with a horn at or below the apex; ovules 2 in each ovary chamber ... 4. *Triumfetta* Linn.
 - Sepals not hooded or horned; ovules more than 2 ... 3
3. Fruit a capsule; petals without a basal appendage
 1. *Corchorus* Linn.
 - Fruit a drupe; petals usually with a basal appendage
 3. *Grewia* Linn.

4953 **1. CORCHORUS** Linn., Sp. Pl., ed. 1, p. 529 (1753)

Flowers bisexual. *Sepals* 4—5, rarely 6, usually linear-lanceolate. *Petals* 4—5, rarely 6, clawed or sessile, as long as the sepals, obovate. *Stamens* numerous, rarely twice the number of the petals, free, springing from a short torus; filaments linear. *Ovary* 2—6-chambered, with many axile ovules in each chamber, often hairy; style shorter, as long as, or longer than, the ovary; stigma cup-shaped, 2—6-lobed or capitate and fimbriate. *Fruit* an elongated capsule, terete or angled, straight or curved, or subglobose, smooth or prickly, loculicidally 2—5-valved, sometimes with transverse septa, many-seeded. *Seeds* black, pendulous or horizontal, often quadrate in outline, often truncate at either end; embryo curved; cotyledons flat; endosperm fleshy.

Herbs or undershrubs, sometimes with long branches from a woody rootstock, covered with simple or stellate hairs; leaves alternate, serrate or deeply lobed, with the teeth sometimes produced into long setaceous points; stipules lateral, often setaceous; inflorescence usually a 2—3-flowered pedunculate cyme, axillary or opposite the leaves; flowers yellow.

Species about 100, found in all tropical countries; 12 species in South Africa, found in South West Africa, the Transvaal, Zululand, Natal, the western Orange Free State, and the north-western districts. (Type: *C. olitorius* Linn.)

4957 **2. SPARMANNIA** Linn. f., Suppl., p. 41 (1781)

Flowers bisexual. *Sepals* 4, linear-lanceolate, covered with simple or stellate hairs, deciduous. *Petals* 4, nude, as long as the sepals, obovate-oblong. *Stamens* numerous, free, on a short torus; the outer sterile, moniliform; the inner fertile, sometimes moniliform; filaments shorter than the petals, terete; anthers subglobose. *Ovary* 4—5-chambered, with many ovules in each chamber, with hairs from small protuberances; style simple, terete, longer than the ovary; stigma toothed or simple. *Fruit* a subglobose capsule, 4—5-locular, with many seeds in each loculus, 4—5-valved; valves covered with rigid prickles; prickles with simple or stellate hairs. *Seeds* subglobose; testa hard or leathery; embryo curved or straight; cotyledons flat; endosperm fleshy.

Shrubs or small trees; leaves alternate, petioled, sometimes large, ovate, acuminate, cordate at the base, deeply palmately lobed or with the margins crenate or serrate, palmately veined, softly tomentose or stellately pubescent; stipules filiform, persistent; inflorescence a terminal umbel; flowers white, medium-sized.

Species 7, natives of Africa and Madagascar; extending from the Transvaal, Zululand, Natal, the eastern Orange Free State to the Humansdorp, George, and Knysna districts. (Type: *S. africana* L. fil.)

4966

3. GREWIA Linn., Sp. Pl., ed. 1, p. 964 (1753)

Flowers bisexual. *Sepals* 5, usually coloured within, linear or linear-lanceolate, stellately hairy or densely hirsute without. *Petals* 5, sessile or clawed, shorter than the sepals, with a hairy appendage at the base, rarely without. *Stamens* indefinite, free, all fertile, arising from a raised torus; torus sometimes densely hirsute above; filaments terete. *Ovary* 2—4-chambered, sometimes lobed, with 2 to many axile ovules in each chamber, hairy, sometimes glandular; style simple, much longer than the ovary, terete, sometimes thickened upwards; stigma capitate or flat, 2—4-lobed. *Fruit* a 1—4-lobed or entire drupe, with 1—4-pyrenes; endocarp hard and woody. *Seed* obovate in outline; testa leathery or parchment-like; embryo straight; cotyledons flat, orbicular or elliptic; endosperm scanty or copious.

Trees or shrubs; leaves alternate, simple, often oblong, elliptic, or obovate, entire or serrate, 3—7-nerved at the base; stipules lateral; inflorescence an axillary cyme or umbel, or flowers solitary; flowers purple or yellow, medium-sized.

Species about 439, natives of Africa, Asia, and Australia; 19 species in South Africa, fairly widely distributed but not abundant in the greater part of the Karroo. (Type: *G. occidentalis* Linn.)

4975

4. TRIUMFETTA Linn., Sp. Pl., ed. 1, p. 444 (1753)

Flowers bisexual. *Sepals* 5, usually linear, frequently hooded and provided with a short or long appendage at or near the point, deciduous, usually with scattered stellate hairs without. *Petals* 5, shorter than the sepals, obovate, narrowing towards the base, without an appendage at the base. *Stamens* 5—30, as long as the petals, inserted on a torus; filaments thread-like or linear, sometimes slightly moniliform; anthers oblong. *Ovary* 2—5-chambered, sometimes slightly lobed, with 2 ovules in each chamber, usually hairy or setose; style terete, about as long as the filaments; stigma shortly 2—5-lobed. *Fruit* a small, usually globose, capsule, echinate or setose, indehiscent or dividing into 3—6 valves, with 1—2 seeds in each loculus. *Seeds* obovoid; testa somewhat leathery; embryo straight, sometimes small; cotyledons flat, usually suborbicular; endosperm fleshy, scanty.

Shrubs, undershrubs, or herbs, sometimes from a woody rootstock; leaves alternate, simple, sometimes large, oblong, elliptic, ovate or linear, entire, lobed or serrate, many-nerved, frequently with glands on the serratures on the underside, often hairy; flowers yellow or orange, small, solitary or clustered on simple or branched stalks.

Species about 170, mostly African, but found in all tropical countries; 12 species recorded from the Transvaal, Zululand, Natal, Bechuanaland, and South West Africa. (Type: *T. lappula* Linn.)

113. MALVACEAE

Flowers regular, usually bisexual. *Epicalyx* of 3 to many segments, sometimes absent; segments free or connate, sometimes adnate to the calyx-tube. *Sepals* 5, rarely 3 or 4, lobed or entire, valvate. *Petals* 5, usually sessile and adnate to the base of the staminal-tube, usually obovate, rarely petals 0. *Stamens* many, hypogynous; filaments united into a staminal-tube; staminal-tube bearing free filaments at the apex, on the upper portion, or to the base, sometimes toothed; free filaments linear; anthers 2-theous. *Torus* small, sometimes conical in the centre of the gynaecium, sometimes produced beyond the carpels and dilated at the apex. *Gynaecium* of 2 to many free or fused carpels, arranged round the torus, with 1 to many ovules in each ovary; style simple and globose or club-shaped at the apex, more usually branched

and with the branches as many or twice as many as the carpels. *Fruit* dry, rarely fleshy, usually breaking up into separate dehiscent or indehiscent carpels. *Seed* reniform, subglobose, or obovoid, glabrous or hairy; testa sometimes woody; embryo straight or curved; cotyledons folded and embracing the radicle or flat, sometimes with dark dots; endosperm scanty or 0, rarely copious and fleshy.

Herbs, shrubs, or trees, often softly hairy or with stellate pubescence; leaves alternate, simple, entire or lobed (usually digitately) or sometimes 3—5-foliolate, rarely dissected; stipules free, usually narrow or setaceous, often deciduous; flowers often conspicuous, usually pedicelled, axillary, solitary, rarely arranged in a spike or raceme.

Genera 43, species close on 1,700, dispersed all over the world except in cold countries.

- | | | | | | | | | |
|---|-----|-----|-----|-----|-----|-----|-----|----|
| 1. Style divided at the apex into as many or twice as many branches as the number of carpels... | ... | ... | ... | ... | ... | ... | ... | 2 |
| Style simple, globose or club-shaped at the apex... | ... | ... | ... | ... | ... | ... | ... | 8 |
| 2. Style-branches twice as many as the number of carpels, rarely fewer | | | | | | | | |
| 6. <i>Pavonia</i> Cav. | | | | | | | | |
| Style-branches as many as the number of carpels... | ... | ... | ... | ... | ... | ... | ... | 3 |
| 3. Epicalyx absent | ... | ... | ... | ... | ... | ... | ... | 4 |
| Epicalyx present | ... | ... | ... | ... | ... | ... | ... | 5 |
| 4. Carpels with a false partition within | | | | | | | | |
| Carpels without a false partition within | ... | ... | ... | ... | ... | ... | ... | 4a |
| 1a. <i>Wissadula</i> Medik. | | | | | | | | |
| 4a. Ovules 3—9 in each ovary | ... | ... | ... | ... | ... | ... | ... | 6 |
| Ovule solitary in each ovary | ... | ... | ... | ... | ... | ... | ... | 7 |
| 1. <i>Abutilon</i> Mill. | | | | | | | | |
| 5. <i>Sida</i> Linn. | | | | | | | | |
| 5. Epicalyx of 2—3 segments | ... | ... | ... | ... | ... | ... | ... | 6 |
| Epicalyx of 5—20 segments | ... | ... | ... | ... | ... | ... | ... | 7 |
| 6. Ovules 2—3 in each ovary | | | | | | | | |
| Ovule solitary in each ovary | ... | ... | ... | ... | ... | ... | ... | 4a |
| 2. <i>Sphaeralcea</i> A. St. Hil. | | | | | | | | |
| 4. <i>Malvastrum</i> A. Gray | | | | | | | | |
| 7. Staminal-tube bearing free filaments at the apex; ovule solitary in each ovary | | | | | | | | |
| 3. <i>Althaea</i> Linn. | | | | | | | | |
| Staminal-tube bearing free stamens almost to the base; ovules 3 to many in each ovary | | | | | | | | |
| 7. <i>Hibiscus</i> Linn. | | | | | | | | |
| 8. A decumbent densely stellately tomentose plant | | | | | | | | |
| 8. <i>Allenia</i> Phill. | | | | | | | | |
| Herbs, shrubs, or trees, but not as above | ... | ... | ... | ... | ... | ... | ... | 9 |
| 9. Epicalyx lobed | | | | | | | | |
| Epicalyx not lobed | ... | ... | ... | ... | ... | ... | ... | 10 |
| 12. <i>Gossypium</i> Linn. | | | | | | | | |
| 10. Calyx truncate; fruit large, over 1 inch in diameter | | | | | | | | |
| 9. <i>Thespesia</i> Soland. | | | | | | | | |
| Calyx lobed; fruit much smaller than above | ... | ... | ... | ... | ... | ... | ... | 11 |
| 11. Cotyledons much folded and concealing the radicle | | | | | | | | |
| 10. <i>Cienfuegosia</i> Cav. | | | | | | | | |
| Embryo small, straight; cotyledons flat, not folded and concealing the radicle | ... | ... | ... | ... | ... | ... | ... | 11 |
| 11. <i>Fugosia</i> Juss. | | | | | | | | |

4983

1. *ABUTILON* Adans. Fam., vol. 2, p. 398 (1763)

Flowers bisexual. *Epicalyx* 0. *Calyx* usually tomentose; tube campanulate; lobes ovate, often acuminate. *Petals* sessile, obovate, longer than the calyx,

adnate to the base of the staminal-tube. *Staminal-tube* divided at the apex into many filaments, dilated below, sometimes stellately hairy; filaments terete; anthers 2-theous. *Gynaecium* of 5 to many carpels, closely united in a circle round a central torus and forming a subglobose or compressed "ovary"; ovules 3—9 in each ovary; style-branches as many or fewer than the number of carpels, terete, filiform or clavate; stigmas simple or somewhat capitate. *Fruit* of few to many follicular 1—6-seeded free carpels or the carpels cohering at the base; carpels usually dehiscent by the ventral suture. *Seeds* subreniform; embryo curved; cotyledons folded; radicle lying between the cotyledons; endosperm scanty.

Herbs or shrubs, rarely trees, often softly tomentose; leaves usually on long petioles, usually ovate, rarely narrow, sometimes acuminate, often cordate, entire, angled, or lobed, usually palmately veined; flowers yellow or orange, mostly axillary.

Species about 400, found in all tropical and subtropical countries; 16 (perhaps more) species in South Africa, extending from the Transvaal, Zululand, and Natal to the Uniondale, Humansdorp, George and Knysna districts; also recorded from South West Africa.

4985 1a. WISSADULA Medik., Malven. fam., p. 24 (1787)

Flowers bisexual. *Epicalyx* 0. *Calyx* 5-cleft, pubescent with stellate hairs; tube shallowly saucer-shaped; lobes longer than the tube, ovate. *Petals* 5, obovate-spathulate. *Staminal-tube* short, ventricose; stamens numerous; filaments linear; anthers globose. *Ovary* 3—5-chambered, with 2—3, rarely 1, ovules in each chamber; style short, with 3—5 long terete arms; stigmas capitate. *Fruit* divided into 3—5 carpels; carpels divided internally by a transverse false dissepiment and splitting into 2 valves when ripe, scarcely beaked, pubescent. *Seeds* 1—3 in each carpel, subglobose, hairy; testas somewhat leathery; tegmen membranous; cotyledons lying within one another and forming a deeply concave structure; radicle evident, terete.

Small shrubs; leaves cordate, acuminate, petioled; stipules setaceous; inflorescence a lax panicle; flowers yellow or cream-coloured.

Described species 50, nearly all natives of South America; 1 species described from tropical Africa and 1 species recorded from the Kruger National Park in the northern Transvaal. (Type: *W. zeylanica* Medik.)

NOTE.—In a specimen (Codd No. 5343) which I examined, the ovary may consist of 3—5 ovary-chambers, the style-branches 3—5, and ovules 2—3 in each ovary-chamber. In the fruiting stage the number of carpels varies from 3 to 5 and the seeds may be 1—3 in each carpel.—E. P. P.

4986 2. SPHAERALCEA A. St. Hil., Fl. Brasil, Merid., vol. 1, p. 209 (1825)

(*Sphaeroma* Harv.)

Epicalyx of 3 or 2 linear or ovate free segments, or connate and 3-cleft. *Calyx* hairy; tube campanulate; lobes 5, ovate or lanceolate, sometimes acuminate. *Petals* 5, sessile, longer than the calyx, obovate, adnate to the staminal-tube at the base. *Staminal-tube* dilated at the base, bearing free filaments on the upper half; filaments filiform; anthers 2-theous. *Gynaecium* of many carpels united in a circle round a central torus; carpels hairy; ovules 2—3 in each carpel; style-branches as many as the carpels, filiform or clavate; stigmas capitate. *Fruit* subglobose, of many compressed dehiscent 2—3-seeded carpels which are united round the central torus. *Seeds* reniform; embryo curved; cotyledons flat; endosperm fleshy.

Herbs, shrubs, or undershrubs, usually stellately hairy; leaves alternate, simple, petioled, ovate or oblong, often palmately lobed, crenate or toothed; flowers

flesh-coloured or purple, solitary or fascicled, axillary, sometimes spicate on the branches.

Species about 86, natives of America and Africa; 4 species in South Africa, found in Natal, through the coastal belt to the Clanwilliam district; also recorded from Basutoland, the eastern Orange Free State, and the north-eastern districts of the Cape Province. (Type: *S. cisplatina* St. Hil.)

4991 **3. ALTHAEA** Linn., Sp. Pl., ed. 1, p. 686 (1753)

Epicalyx of 6—9 segments connate at the base. *Calyx* setose; tube shallowly campanulate; lobes 5, ovate. *Petals* 5, sessile, slightly longer than the calyx, obovate, adnate to the base of the staminal-tube. *Staminal-tube* dilated at the base, divided at the apex into many filaments; filaments short; anthers 2-theous. *Gynaecium* of several to many carpels, early free from the central torus; carpels transversely ribbed, with a single ovule in each ovary; style-branches as many as the carpels, filiform, longitudinally stigmatose. *Fruit* of several to many reniform dry 1-seeded indehiscent carpels. *Seed* reniform; embryo horseshoe-shaped; cotyledons folded; endosperm scanty.

Annual or perennial herbs, sometimes with prostrate branches from a long tap-root; leaves simple, petioled, often palmately lobed; flowers purple or white, solitary and axillary or arranged in a terminal raceme.

Species about 80, found in all temperate regions, especially in the northern hemisphere; 7 species in South Africa, recorded from between Verleptepram and the mouth of the Orange River. (Type: *A. officinalis* Linn.)

4995 **4. MALVASTRUM** A. Gray, Mem. Amer. Acad. New Ser., vol. 4, p. 21 (1849)

Epicalyx of 3 linear or ovate segments, sometimes covered with stellate hairs, sometimes absent. *Calyx* usually variously hairy, rarely glabrous; tube campanulate; lobes 5, ovate. *Petals* 5, sessile, more rarely clawed, longer than the calyx, adhering to the base of the staminal-tube, obovate, more rarely spathulate, sometimes with 2 membranous appendages at the base. *Staminal-tube* dilated at the base, bearing free filaments on the upper portion, hairy; filaments almost filiform; anthers kidney-shaped, dehiscing laterally. *Gynaecium* of 5 to many carpels, with a single ascending ovule in each ovary, sometimes hairy; style-branches as many as the carpels, terete, sometimes clavate; stigmas truncate or capitate. *Fruit* of carpels separating from a central axis, indehiscent or carpels 2-valved, blunt or shortly beaked at the apex, sometimes with transverse ridges, sometimes hairy or shortly 2-spinose on the back. *Seeds* brown, reniform, sometimes with scattered glands or shortly hairy; embryo slightly curved; cotyledons folded; endosperm scanty.

Herbs or small shrubs, sometimes tufted; leaves various, often ovate, more rarely spathulate, often palmately lobed, often cordate at the base, entire, serrate or crenate; flowers usually golden or yellow, shortly pedicelled or subsessile, axillary or arranged in a terminal spike.

Species about 190, natives of Africa and America; about 25 species in South Africa found in the Transvaal, Zululand, Natal to the south-western districts of the Cape Province; also recorded from a few localities in the Karoo and from Ngamiland. (Type: *M. coccineum* (Pursh.) A. Gray)

4998 **5. SIDA** Linn., Sp. Pl., ed. 1, p. 683 (1753)

Epicalyx 0 or distant from the calyx. *Calyx* glabrous or hairy, tube shallowly campanulate; lobes 5, ovate, sometimes acuminate. *Petals* 5, sessile, adhering to the base of the staminal-tube, scarcely longer than the calyx, obovate. *Staminal-tube* dilated at the base, divided at the apex into several or many

free filaments, usually glabrous; filaments terete; anthers 2-theous. *Gynaecium* of 5 to several or many carpels, with a single pendulous ovule in each ovary; carpels terete, sometimes clavate; stigmas capitate or truncate. *Fruit* of 5 to several or many carpels which at length separate from a central axis; carpels dehiscent at the summit, sometimes transversely ribbed, sometimes beaked or awned and with reflexed hairs. *Seeds* 3-angled, pendulous or horizontal; embryo curved; cotyledons folded; endosperm 0 or scanty.

Herbs or shrubs, often softly hairy or tomentose; leaves usually petioled, simple, often ovate, lanceolate or oblong, entire or toothed, often palmately lobed; flowers yellow, orange, or white, rarely purple, sessile or pedicelled, with the pedicels sometimes very long, solitary or massed in the leaf-axils or grouped in racemes, spikes, or heads.

Species about 330, found in all warm regions, especially America. 11 species recorded from South Africa, extending from the Transvaal and Natal through the eastern districts to the Riversdale district; also found in Bechuanaland, South West Africa, and a few inland districts. (Type: *S. rhombifolia* Linn.)

5007 6. PAVONIA Cav., Diss., vol. 2, App. 2 (1786) et vol. 3, p. 132, t. 45 (1787)

Epicalyx of 5—14 ovate or linear or almost filiform segments which are distinct or connate among themselves and with the calyx-tube sometimes much longer than the calyx. *Calyx-tube* saucer-shaped or campanulate; lobes 5, ovate. *Petals* 5, sessile, adnate to the staminal-tube at the base, longer than the calyx, obovate. *Staminal-tube* dilated at the base, truncate and 5-toothed at the apex, bearing free filaments on the upper portion; filaments terete; anthers 2-theous. *Gynaecium* of 5 carpels with a single ovule in each ovary; style-branches terete, usually 10, but sometimes less though more than the number of carpels; stigmas capitate, often penicillate. *Fruit* of 5 indehiscent 1-seed carpels which separate from a central axis; carpels with a membranous or subwoody pericarp, often reticulated or ribbed, sometimes pubescent. *Seeds* kidney-shaped; embryo curved; cotyledons folded; endosperm 0.

Herbs or shrubs, tomentose, hispid, or glabrescent; leaves sometimes long-petioled, ovate or obovate, sometimes cordate at the base, often crenate, mostly palmately veined; flowers yellow, white, or red, solitary and pedicelled, or arranged in heads at the apices of the branches.

Species about 240, found in all warm countries, especially America; about 13 species in South Africa occurring in the Transvaal, Zululand, Natal, and through the coastal belt to the Riversdale district, but also extend into the north-western districts, Bechuanaland, and South West Africa. (Type: *P. paniculata* Cav.)

5013 7. HIBISCUS Linn., Sp. Pl., ed. 1, p. 693 (1753)

Epicalyx of 5—20 segments; segments linear-lanceolate, lanceolate, ovate, or spatulate, sometimes long-awned, usually as long as or longer than the calyx, rarely very small, sometimes adnate to the calyx-tube, often hairy. *Calyx* often hairy; tube campanulate; lobes 5, ovate, lanceolate, sometimes acuminate. *Petals* 5, sessile, adnate at the base to the staminal-tube, usually much larger than the sepals, usually obovate. *Staminal-tube* slightly dilated at the base, truncate and toothed above, bearing free filaments almost to the base; filaments terete; anthers 2-theous. *Gynaecium* of 4—5 fused carpels, with 3 to many ovules in each ovary, often hairy; style-branches as many as the carpels, sometimes thickened, spatulate or dilated at the apex; stigmas usually capitate and penicillate. *Fruit* loculicidally 4—5-valved, surrounded by the persistent calyx; valves sometimes beaked. *Seeds* reniform or sub-globose, glabrous, tomentose, or woolly; embryo slightly curved; cotyledons folded; endosperm 0.

Herbs, shrubs, or trees, sometimes semi-prostrate with the branches from woody rootstocks, sometimes prickly; leaves usually petioled, usually simple, more rarely palmately compound, variously shaped, often palmately lobed or multisect, entire, crenate, or serrate, often palmately lobed; flowers solitary, often showy, often with a dark centre and a velvety or silky surface.

Species about 580, found in all warm countries; about 40 species in South Africa widely distributed. (Type: *H. syriacus* Linn.)

5013a 8. ALLENIA Phill., Journ. S. Afr. Bot., vol. 10, p. 33 (1944)

Epicalyx of 12 linear tomentose segments connate at the base to form a shallow basin. *Calyx-tube* as long as the epicalyx, campanulate; lobes shorter than the tube, ovate. *Petals* 5, sessile, adnate at the base to the staminal-column, about as long as the calyx, oblong, tomentose without. *Staminal-tube* broadened at the base, bearing many anthers on free filaments on the upper half; filaments terete, slightly shorter than the anthers; anthers horseshoe shaped, 2-theous. *Ovary* subglobose, deeply 5-lobed, 5-chambered, with several axile ovules in each chamber, densely tomentose; style terete, simple, capitate at the apex and divided into 5 fleshy pubescent cushions. *Fruit* a 5-valved capsule. *Seed* glabrous; embryo straight; cotyledons flat, elliptic; endosperm copious.

A procumbent herb with radiating stems, densely tomentose in all parts with stellate hairs; leaves petioled, simple, ovate or suborbicular, cordate at the base, prominently veined beneath, rugose above; flowers axillary, 2—4-nate.

Endemic; species 1, recorded from the Bloemhof, Fauresmith, Graaff-Reinet, De Aar, Williston, and Prieska districts; also from Namaqualand, Bushmanland, and South West Africa. (Type: *A. urens* (Linn. f.) Phill. = *Hibiscus urens* Linn. f.)

5018 9. THESPESIA Soland. ex Corr., Ann. Mus. Paris, vol. 9, p. 290, t. 8, f. 2 (1807)

Epicalyx of 3—8 small and sometimes deciduous segments. *Calyx* saucer-shaped, truncate, sometimes minutely 5-toothed, rarely 5-fid. *Petals* 5, large, adnate at the base to the staminal-tube, hairy on the outer surface. *Staminal-tube* toothed at the apex, bearing free filaments on its outer surface almost to the base; free filaments terete; anthers linear. *Gynaecium* of 5 fused carpels, with a few ovules in each ovary; style club-shaped above, 5-furrowed, or 3-angled, or obscurely divided into stigmatic lobes. *Fruit* a large subglobose woody capsule, indehiscent or loculicidally 5-valved, tomentose. *Seeds* black, obovoid or subglobose, glabrous or tomentose; testa woody; cotyledons much folded, often black-dotted; endosperm 0.

Trees or shrubs; leaves large, petioled, often cordate or ovate, entire or lobed; flowers usually yellow, often showy, solitary.

Species about 11, found in all tropical countries; 2 species recorded from Zululand and Natal. (Type: *T. populnea* (L.) Soland. ex Corr.)

5019 10. CIENFUEGOSIA Cav., Diss., vol. 3, p. 174, t. 72, fig. 2 (1787)

Epicalyx of 3 to many ovate or lanceolate segments; segments sometimes connate, sometimes glandular. *Calyx* sometimes glandular; tube campanulate; lobes 5, ovate, apiculate, sometimes acuminate, usually with raised nerves. *Petals* 5, sessile, adnate at the base to the staminal-tube, obovate, with dark specks. *Staminal-tube* truncate or toothed, bearing free filaments almost to the base; filaments linear; anthers horseshoe-shaped. *Gynaecium* of 3—4 fused carpels, with 3 to many ovules in each ovary, sometimes with black ducts in the ovary wall, hairy; style simple, club-shaped at the apex, furrowed or divided into 3—4 club-shaped stigmas. *Fruit*

a loculicidal 3—4-valved capsule. *Seeds* obovoid, glabrous, pubescent, or woolly; testa woody; cotyledons much folded and concealing the base of the radicle, sometimes dotted; endosperm thin.

Shrubs or undershrubs; leaves entire and lobed or digitately 3-foliate; flowers often yellow, solitary.

Species about 20, natives of America, Australia, and Africa; 4 species in South Africa, found in the Transvaal, Swaziland, Zululand, Natal, and South West Africa. (Type: *C. digitata* Cav.)

5019a

11. FUGOSIA Juss., Gen., p. 274 (1789)

Epicalyx of 3 separate linear segments which are sometimes 2-lobed. *Calyx* leathery; tube campanulate; lobes 5, ovate, with 3 raised ribs. *Petals* 5, sessile, adnate at the base to the staminal-tube, obovate, with scattered dark spots. *Staminal-tube* with free filaments almost to the base; filaments linear; anthers horseshoe-shaped. *Gynaecium* of 3 fused carpels, with ducts in the walls of the ovary, with 2 ovules in each ovary, hairy; style simple, with black scattered glands, somewhat globose at the apex. *Fruit* obovoid, hairy. *Seeds* with a leathery testa, glabrous; embryo small, straight; cotyledons flat; endosperm scanty.

Subherbaceous, with branches from a woody rootstock, leaves simple, mostly cordate, sometimes slightly lobed, palmately veined; flowers yellow, large, solitary, axillary.

Species 1, recorded from the Transvaal, Zululand, and Natal.

5020

12. GOSSYPIUM Linn., Sp. Pl., ed. 1, p. 693 (1753)

Epicalyx of 3 large lobed cordate segments, covered with black dots. *Calyx* basin-shaped, truncate or 5-fid, covered with black dots. *Petals* 5, adnate to the base of the staminal-tube, obovate, with scattered black dots. *Staminal-tube* usually naked above, bearing free filaments; filaments linear; anthers horseshoe-shaped. *Gynaecium* of 3—5 fused carpels, with few to many ovules in each ovary; style simple, club-shaped and furrowed above. *Fruit* a capsule with loculicidal dehiscence. *Seeds* with a hard testa, densely woolly; cotyledons much folded and embracing the radicle, covered with black dots; endosperm 0.

Herbs or shrubs; leaves usually digitately 3—9-lobed, rarely entire; flowers yellow or purple, large, solitary.

Species 10, natives of warm countries; 2, perhaps 3, species found native in the Transvaal. (Type: *G. herbaceum* Linn.)

114. BOMBACACEAE

Flowers bisexual. *Epicalyx* sometimes present. *Calyx* leathery, closed and valvate in the bud or irregularly lobed or truncate or rarely deeply 5-fid. *Petals* 5, adhering to the base of the staminal-tube, sometimes absent. *Stamens* free or united into a tube; anthers reniform to linear, 1-theous. *Ovary* superior, 2—5-chambered, with 2 or more ovules in each chamber; style simple, capitate or lobed at the apex. *Fruit* a capsule or nut, very rarely separating into carpels. *Seeds* often embedded in hairs from the walls of the fruit or in a pulp; cotyledons flat or contorted or plicate; endosperm scanty.

Trees, sometimes with bulging stems; leaves alternate, simple or digitately compound; stipules present; flowers usually solitary, large and showy; bracts and bracteoles usually present.

Genera 21, with about 150 species, natives of Africa, Madagascar, India, Australia, America, and the Malay Archipelago.

5023 ADANSONIA Linn., Sp. Pl., ed. 1, p. 1190 (1753)

Epicalyx 0. *Calyx* leathery, densely tomentose within and without; tube campanulate; lobes lanceolate. *Petals* 5, leathery, adnate to the base of the staminal-tube, obovate. *Staminal-tube* divided at the apex into many filaments; filaments linear; anthers reniform. *Ovary* 5—10-chambered, with many axile ovules on long funicles in each chamber, tomentose; style simple, longer than the staminal-tube, divided above into as many lobes as there are chambers in the ovary; lobes large, fleshy, lanceolate. *Fruit* ellipsoid or subglobose, woody, indehiscent, filled with pulp, tomentose. *Seeds* reniform, embedded in the pulp; testa woody; embryo curved; cotyledons much folded; endosperm thin.

Trees with a comparatively short trunk, acquiring an immense girth; with the wood soft and spongy; leaves digitately compound; leaflets entire; flowers white, solitary, pedicelled, large, pendulous; bracts present.

Species 14, natives of Africa, Madagascar, and Australia; 1 species (probably a variable one) found in the northern Transvaal and Ngamiland. (Type: *A. digitata* Linn.)

115. STERCULIACEAE

Plants sometimes monoecious with occasional bisexual flowers. *Flowers* sometimes all bisexual, regular. *Epicalyx* present or absent. *Calyx* 3—5-cleft or -partite, rarely sepals free, valvate. *Petals* 5, free or adnate to the base of the staminal-tube, with twisted aestivation, sometimes persistent, rarely absent. *Stamens* hypogynous, as many as the petals and opposite to them, sometimes twice or several times as many, free or connate into a tube or into a solid staminal-column; staminodes sometimes present; anthers 2-theccous. *Gynaecium* of 2—5 more or less free carpels, very rarely carpels 10—12 or reduced to one, with 1 to many ovules in each ovary; style entire or divided into as many lobes as there are carpels, rarely styles free. *Fruit* dry or fleshy, often dividing into dehiscent or indehiscent carpels. *Seeds* with a thick or hard testa; embryo straight or curved; cotyledons thin or fleshy; endosperm fleshy, thin, or 0.

Herbs, shrubs, or trees, commonly with stellate hairs; leaves alternate, very rarely subopposite, simple, entire or lobed or digitately 3—10-foliolate; stipules usually present; inflorescence an axillary or terminal umbel or raceme or a cymose panicle or flowers solitary.

Genera 51, species over 1,200, found in tropical countries of both hemispheres; abundant in South Africa and Australia.

- | | |
|---|-------------------------------|
| 1. Flowers often unisexual; petals absent; stamens connate into a solid column bearing anthers at apex | 2 |
| Flowers bisexual; petals present; stamens free or connate at the base | 3 |
| 2. Style peltate or lobed at the apex; seed with endosperm | |
| 5. <i>Sterculia</i> Linn. | |
| Style divided into as many lobes as there are carpels; seed without endosperm | 6. <i>Cola</i> Schott & Endl. |
| 3. Staminodes present | 4 |
| Staminodes absent | 5 |
| 4. Fertile stamens 5 | 1. <i>Melhanhia</i> Forsk. |
| Fertile stamens 10—15 | 2. <i>Dombeya</i> Cav. |

5. Filaments with broad membranous wings or cruciform at the middle;
 ovary 5-chambered ... 3. *Hermannia* Linn.
 Filaments not as above, connate into a tube; ovary 1-chambered
 4. *Waltheria* Linn.

5047 1. MELHANIA Forsk., Fl. Aegypt. Arab., p. 64 (1775)

Flowers bisexual. *Epicalyx* of 3 persistent segments, sometimes longer than the calyx; segments usually ovate, sometimes acuminate, usually hairy. *Calyx* 5-partite, usually hairy, sometimes with stellate hairs; segments ovate-lanceolate, lanceolate, or linear. *Petals* 5, scarcely longer than the calyx, obovate, convolute in aestivation. *Fertile stamens* 5, alternating with 5 staminodes; filaments connate at the base, linear, sometimes shorter than the anthers; anthers linear, sagittate; staminodes broadly linear, as long as, longer, or shorter than the fertile stamens. *Ovary* 5-chambered, with 1 to several axile ovules in each chamber, densely tomentose; style, not much longer than the ovary, divided into 5 stigmatic lobes at the apex. *Fruit* a loculicidal capsule. *Seeds* somewhat 3-angled; testa leathery, pustulate; cotyledons deeply 2-lobed, folded; radicle straight; endosperm fleshy.

Herbs or undershrubs, sometimes dwarf from a woody rootstock; leaves alternate, simple, ovate, cordate, oblong, or oblong-lanceolate, entire, serrate or crenate, often hairy; stipules narrow; flowers often yellow, axillary, pedicelled, solitary or 2-nate.

Species about 60, natives of Africa and Asia; 16 species in South Africa, extending from the Transvaal, Zululand, and Natal to the Uitenhage district; also recorded from the north-western districts, Ngamiland, and South West Africa. (Type: *M. velutina* Forsk.)

5053 2. DOMBEYA Cav., Diss., vol. 3, p. 121, tt. 38, 41 (1787)

Flowers bisexual. *Epicalyx* of 3 ovate segments usually shorter than the calyx, deciduous, sometimes absent. *Calyx* 5-partite; segments usually lanceolate, acuminate, sometimes reflexed. *Petals* 5, sessile, obovate, unequal-sided, convolute, persistent. *Fertile stamens* 10—15, connate at the base only or forming a distinct cup-like tube; filaments linear; anthers oblong or linear; staminodes 5, usually longer than the fertile stamens, linear or strap-shaped. *Ovary* sessile, with 2—4 ovules in each chamber, tomentose; style simple, usually divided into 5 branches, or styles 2—5, almost free. *Fruit* somewhat 3-angled; cotyledons deeply 2-lobed, flat or folded; radicle straight; endosperm fleshy.

Shrubs or small trees; leaves alternate, simple, usually rotund or ovate, sometimes cordate at the base, sometimes lobed, often crenate, palmately veined; inflorescence a cyme or umbel, often many-flowered; flowers rosy or white.

Species about 190, natives of Africa and Madagascar; 16 species recorded from South Africa, extending from the Transvaal, Zululand, and Natal, through the eastern districts to the Bathurst district; also found in the Queenstown district and in South West Africa. (Type: *D. palmata* Cav.)

5056 3. HERMANNIA Linn., Sp. Pl., ed. 1, p. 673 (1753)

(*Mahernia* Linn.)

Calyx usually membranous and veined, usually hairy, sometimes with glandular hairs; tube globose, campanulate or urceolate, sometimes distinctly 5-angled; lobes ovate, longer or shorter than the tube. *Petals* 5, obovate or oblong, sessile or clawed, spirally twisted; claws with infolded margins. *Stamens* 5, opposite the petals, longer or shorter than the ovary; filaments connate at the base or almost free, linear with broad membranous

wings or somewhat cruciform; anthers mostly lanceolate, faintly or distinctly 2-lobed at the apex. *Ovary* sessile or shortly stalked, 5-lobed, 5-chambered, with few to many axile ovules in each chamber, hairy; styles 5, free or more or less connate so that the style appears to be simple or style actually simple and capitate above. *Fruit* a 5-locular loculicidal capsule, sometimes horned above, hairy. *Seeds* reniform, usually ribbed; embryo curved; cotyledons flat; endosperm fleshy.

Herbs, shrubs, or undershrubs, sometimes with long tap-roots, frequently covered with stellate hairs; leaves alternate, simple, usually petioled, simple, entire toothed, or pinnatifid, often plaited; stipules often foliaceous, rarely small or 0; flowers yellow, orange, cream-coloured, violet, or red, axillary and solitary or 2-nate or grouped in a terminal pseudo-raceme or panicle.

Species over 300, natives of Africa, Arabia, Australia, and South America; about 240 species in South Africa, widely distributed. (Type: *H. hyssopifolia* Linn.)

NOTE.—The South African representatives of the genus will repay an examination as it is probable that those species with cruciform filaments should be replaced in the genus *Mahernia* Linn.—E. P. P.

5059 4. WALTHERIA Linn., Sp. Pl., ed. 1, p. 673 (1753)

Flowers bisexual. *Epicalyx* 3-leaved or wanting. *Calyx* membranous, veined, hairy; tube campanulate; lobes ovate, acuminate. *Petals* 5, spathulate, clawed, attached to the base of the staminal-tube and falling with the stamens and style. *Stamens* 5, opposite the petals, connate into a membranous tube or connate at the base only; anthers sessile on the staminal-tube, oblong. *Ovary* with a membranous wall, 1-chambered, with 1—2 ovules; style simple, lateral, shorter than the ovary; stigma multifid. *Fruit* a 2-valved 1-seeded capsule. *Seed* ascending; embryo straight; cotyledons flat, broad; endosperm fleshy.

Herbs or shrubs, rarely small trees, with stellate and simple pubescence; leaves alternate, simple, petioled, oblong, serrated; stipules small; flowers small, grouped in sessile or peduncled axillary clusters or arranged in small cymes.

Species about 70, chiefly tropical American; 1 species occurs in the Transvaal, Zululand, Natal, and South West Africa. (Type: *W. americana* Linn.)

5083 5. STERCULIA Linn., Sp. Pl., ed. 1, p. 1007 (1753)

Plants monoecious or with occasional unisexual flowers. *Calyx* often coloured, usually hairy; tube saucer-shaped or campanulate; lobes ovate. *Petals* 0. *Stamens* 10—15, consisting of anthers in a capitate head at the summit of a solid staminal-column. *Gynaecium* of 5 subdistinct carpels, at the summit of the staminal-column, sometimes surrounded by a few anthers, with 2 to many parietal ovules in each ovary; carpels sometimes with stiff stellate hairs; style peltate or lobed at the apex. *Fruit* separating into distinct carpels spreading horizontally; carpels woody or leathery and at length splitting longitudinally, or membranous or subfoliaceous and opening early, sometimes tailed, sometimes with protuberances, often hairy. *Seeds* black, 1 to several in each carpel, sometimes winged; testa thick or woody; embryo straight, sometimes with 4 embryonic leaves between the cotyledons; cotyledons flat, adhering to the endosperm and not easily separated from it; endosperm fleshy.

Trees; leaves alternate, petioled, simple or digitately compound, often with 3—10 leaflets; stipules deciduous; inflorescence an axillary or subterminal panicle; flowers red, yellow, or partly coloured.

Species about 300, found in all tropical countries, most abundant in Asia and Africa; 6 species recorded from South Africa, found in the Transvaal, Swaziland, Bechuanaland, South West Africa, and in the Uitenhage district. (Type: *S. foetida* Linn.)

5091

6. COLA Schott & Endl., Melet., p. 33 (1832)

Plants monoecious or with occasional bisexual flowers. *Calyx* sometimes leathery; tube sometimes shallow; lobes usually 4, more rarely 5—6, lanceolate. *Petals* 0. *Stamens* 10—12, united into a long or short solid column bearing sessile anthers in a single row at the apex; in the bisexual flower the anthers surrounding the base of the gynaecium. *Gynaecium* of 4—10, rarely 11—12, subdistinct carpels, with several to many ovules in each ovary; carpels often hairy; styles as many as the carpels, short, filiform, linear, or dilated. *Fruit* separating into 4—5, rarely more, woody or leathery carpels; carpels with few to many seeds; at length splitting lengthwise. *Seeds* ellipsoid or obovoid; testa thick; cotyledons thick and fleshy, sometimes with longitudinal ducts; endosperm 0.

Trees; leaves alternate, simple, entire or lobed, sometimes lanceolate; inflorescence a short cyme or subpanicle or flowers in axillary clusters.

Species about 125, natives of Africa; 1 species recorded from Natal and Pondoland. (Type: *C. acuminata* (Beauv.) Schott & Endl.)

116. OCHNACEAE

Flowers bisexual. *Sepals* 4—5, rarely 10, free or nearly so, imbricate. *Petals* 5, more rarely 4 or up to 10, free, subsessile, contorted or imbricate. *Torus* usually ample. *Stamens* 4—10 to many, free or united to form a tube; anthers 2-theous, opening by longitudinal slits or terminal pores; staminodes sometimes present. *Ovary* superior, often 2—10-lobed, 1—10-chambered or gynaecium sometimes of more or less free carpels; ovules 1—2 to many in each ovary-chamber or ovary, axile or parietal or attached to the intrusive placentas; style simple or bifid at the apex or divided into as many lobes as there are chambers in the ovary. *Fruit* a drupe or capsule, with the carpels often large and fleshy; endosperm present or absent.

Shrubs or trees, rarely undershrubs, leaves alternate, simple, entire, or toothed; stipules present; inflorescence a raceme or panicle, rarely flowers solitary.

Genera 23; species over 300, natives of tropical countries, mostly American.

5112

OCHNA Schreb., Gen., p. 354 (1789)

Sepals 5, coloured, elliptic, suborbicular, ovate, or obovate, persistent. *Petals* 5—10, slightly larger than the sepals, obovate, oblong, oblong-obovate, shortly clawed or cuneate at the base, deciduous. *Torus* thick, sometimes lobed, sometimes produced into a gynophore. *Stamens* many, shorter than the petals; filaments oblong or oblong-linear. *Gynaecium* of 3—13 more or less distinct carpels, with a solitary ovule in each ovary; style simple and capitate or globose or saucer-shaped at the apex or divided into as many lobes as there are carpels. *Fruit* a drupe, more or less separating into distinct carpels, kidney-shaped, ellipsoid or subglobose. *Seed* erect; cotyledons thick; radicle straight; plumule of a few minute leaves; endosperm 0.

Trees or shrubs; leaves alternate, simple, entire or serrated; stipules present; inflorescence a raceme or panicle or flowers solitary or 2—4-nate; flowers yellow; pedicels articulated.

Species about 140, natives of Asia and Africa; 10 species found in South Africa, extending from the northern Transvaal and Natal to the Humansdorp and Knysna districts; also found in the eastern Orange Free State.

117. GUTTIFERAE

Plants sometimes dioecious or with occasional bisexual flowers. *Flowers* sometimes all bisexual. *Sepals* 2—6, rarely more, imbricate, sometimes in opposite pairs. *Petals* as many as the sepals, imbricated or contorted. *Stamens* indefinite, rarely definite and equalling or double the number of the petals, free or all connate or connate in bundles. *Staminodes* often present in the female flowers. *Ovary* superior, 2- to many-chambered, rarely 1-chambered, with 1 to many ovules in each chamber; styles as many as the ovary-chambers, free or connate. *Fruit* a capsule, berry, or drupe. *Seed* straight or rarely curved, with or without an aril; embryo straight or curved; endosperm 0.

Herbs, shrubs, or rarely trees; leaves opposite, often decussate, rarely whorled, simple, entire, sometimes gland-dotted; stipules 0; inflorescence a cymose-panicle, a trichotomous panicle, or rarely a raceme or flowers solitary, terminal, or axillary; flowers white, yellow, or rosy.

Genera 49, species about 1,200, widely dispersed in warm and temperate countries, especially Asia and America.

Branches terete; calyx 5-parted; ovules several in each ovary-chamber

1. *Hypericum* Linn.

Branches angled; sepals 4; ovule solitary in each ovary-chamber

2. *Garcinia* Linn.

5168

1. *HYPERICUM* Linn., Sp. Pl., ed. 1, p. 783 (1753)

Flowers bisexual, regular. *Sepals* 5, equal or subequal, acute or rounded at the apex, pellucid-dotted, with or without glandular stalked protuberances along the margins. *Petals* 5, twisted in bud, distinctly veined with black spots on the surface and margins or along the margins only. *Stamens* indefinite, free or connate at the base into 3—5 distinct or indistinct groups; filaments thread-like; anthers with or without black or yellow spots. *Ovary* superior, sessile, ovate to subround in outline, 3—5-chambered, with few to many ovules on parietal placentas in each chamber; styles 3—5, free or connate at the tip; stigmas small, capitate. *Fruit* a capsule with few to many seeds. *Seeds* oblong or linear in outline, straight or slightly curved; testa thin, ribbed, punctate, or smooth; embryo straight or curved.

Shrubs or perennial herbs from a woody base; leaves opposite sessile, amplexicaul or shortly petioled, entire, mostly pellucid-dotted, with or without reticulated veins; stipules 0; inflorescence a loose or compact cyme or flowers terminal on short lateral branches; flowers yellow.

Species about 580, widely dispersed, especially in the northern hemisphere; 7 species in South Africa, extending from the Transvaal, Natal, and the coastal belt to the Riversdale district; also recorded from the eastern Orange Free State, the Victoria East and Somerset East districts and from South West Africa. (Type: *H. perforatum* Linn.)

NOTE.—The genus is placed in the family *Hypericaceae* by J. Hutchinson, *Families of Flowering Plants*.—E. P. P.

5199

2. *GARCINIA* Linn., Sp. Pl., ed. 1, p. 443 (1753)

Plants dioecious, occasionally with bisexual flowers. *Sepals* 4, in opposite pairs. *Petals* 4, rarely 5, sessile, longer than the sepals, suborbicular. *Torus* pitted. *Male flowers*:—*Stamens* indefinite, free or all connate or connate in 3—4 bundles with each bundle forming a solid staminal-column bearing free filaments above; filaments linear or terete; anthers subdidymous, erect or peltate, opening by a circular rim or longitudinal slits. *Female* or *bisexual*

flowers:—*Staminodes* various, free or united. *Ovary* 2- to many-chambered, with a solitary ovule in each chamber; stigma sessile, peltate, lobed, smooth or tuberculate. *Fruit* baccate. *Seed* ellipsoid; embryo with minute cotyledons.

Trees, usually with yellow juice, sometimes with leafy branches modified into thorns; leaves opposite or in whorls of 3, leathery or submembranous, sometimes large, lanceolate, elliptic, or oval, sometimes acuminate; inflorescence a subpanicle or flowers axillary or terminal, solitary or fascicled, sometimes from the old branches.

Species about 382, natives of tropical countries, especially tropical Asia; 3, perhaps 4, species in South Africa, extending from the northern Transvaal, through Zululand and Natal to the Transkei. (Type: *G. mangostana* Linn.)

118. ELATINACEAE

Flowers bisexual, regular. *Sepals* 2—5, free, imbricate. *Petals* 2—5, imbricate. *Disc* 0. *Stamens* as many or twice as many as the petals, hypogynous, free; anthers versatile, 2-theous. *Ovary* superior, 2—5-chambered, with many axile ovules in each chamber; styles 2—5, free, capitate at the apex. *Fruit* a septicidal capsule. *Seed* straight or curved; embryo conforming to the shape of the seed; endosperm 0 or very thin.

Herbs or undershrubs, sometimes diffuse, sometimes found in wet places; leaves opposite, rarely whorled, simple, entire or serrate; stipules in pairs; flowers small, axillary, solitary or arranged in fascicled cymes.

Genera 2, species about 35, widely dispersed in tropical and temperate countries.

5230 BERGIA Linn., Mant., vol. 2, p. 152, No. 1309 (1771)

Sepals 5, free, lanceolate or oblong, sometimes keeled, often with hyaline margins or with 2 hyaline lobes at the base. *Petals* 5, free, sessile, about as long as or shorter than the sepals, oblong or linear-oblong, sometimes with membranous tips. *Stamens* 10 or 5; those opposite the petals sometimes shorter or absent; filaments linear, sometimes dilated below; anthers small. *Ovary* 5-chambered or gynaeceum of almost free carpels, with many ovules in each ovary-chamber or ovary; styles 5, free, shorter than the ovary. *Fruit* a 5-locular or 5-valved capsule or breaking up into distinct carpels. *Seeds* brown, few, 3-angled; embryo straight or curved; endosperm 0.

Prostrate, rarely erect, herbs or undershrubs, often pubescent; leaves opposite, obovate, lanceolate, elliptic, or linear, entire or serrate; flowers axillary, sessile or pedicelled, solitary or in fascicled cymes.

Species about 30, widely dispersed in tropical and subtropical countries; 1 species in South Africa, found in the Transvaal, the north-western districts, Bechuanaland, and South West Africa; also occurs in the Cape, Riversdale, Humansdorp, and Uitenhage districts. (Type: *B. capensis* Linn.)

119. FRANKENIACEAE

Flowers bisexual, regular. *Sepals* 4—6, joined to form a tube, induplicate-valvate, persistent. *Petals* 4—6, free, clawed, usually with a scale-like appendage, imbricate. *Stamens* usually 6, sometimes 4—5 or many, hypogynous, free or connate; anthers 2-theous. *Ovary* sessile, superior, 1-chambered, with several or many ovules on 2—4 parietal placentas; style simple, divided at the apex. *Fruit* a capsule, enclosed in the persistent calyx. *Seeds* ovoid-ellipsoid, or oblong in outline; embryo straight; endosperm mealy.

Perennial herbs or undershrubs, sometimes articulated at the nodes, often inhabiting salt marshes or the sea-coast; leaves small, opposite or whorled; stipules 0; inflorescence a cyme or flowers solitary.

Genera 5, species about 130, natives of Persia, South America, and Africa.

5233

FRANKENIA Linn., Sp. Pl., ed. 1, p. 331 (1753)

Calyx sometimes with glandular hairs; tube tubular, deeply furrowed and ribbed; lobes 4—5, small, ovate. *Petals* 4—5, free, longer than the calyx, usually furnished with a small ligule-like appendage; limb obovate, usually somewhat crenate; claw long. *Stamens* usually 6, more rarely 4—5, as long as the petals; filaments linear, sometimes dilated at the middle, variously cohering or free; anthers oblong. *Ovary* with 2—4 parietal placentas, with several ovules; style terete, longer than the stamens, 3-lobed above. *Seeds* brown, ellipsoid; testa thin; cotyledons oblong; radicle thick; endosperm mealy.

Small perennial shrubs or undershrubs, with diffuse, rarely erect, wiry stems; leaves small, heath-like, more rarely subrotund, often punctate, opposite or whorled; inflorescence a terminal cyme.

Species about 90, widely distributed in tropical and temperate regions; 5 species in South Africa found in the Transvaal, the north-western districts, South West Africa, and from the south-western districts of the Cape Province, through the south-eastern districts to East London. (Type: *F. laevis* Linn.)

120. TAMARICACEAE

Flowers usually bisexual, regular. *Sepals* 4—6, free or connate at the base, imbricate. *Petals* usually as many as the sepals, usually free or joined to form a tube. *Disc* hypogynous or slightly perigynous, composed of 10 glands or entire and crenate or angled, rarely obsolete. *Stamens* 5—10, inserted on the disc, free or connate at the base; anthers 2-theous. *Ovary* superior, 1-chambered or imperfectly septate, with few to many ovules on parietal placentas; styles 3—5, free or connate, sometimes stigmas sessile. *Fruit* a capsule. *Seed* with a tuft of hairs at the apex or all round; embryo straight; endosperm present or absent.

Shrubs or undershrubs, rarely trees; leaves small, alternate, simple, often scale-like, entire, often fleshy, often punctate; stipules 0; inflorescence a spike, raceme, or panicle, or flowers solitary terminal or axillary.

Genera 4; species about 117, natives of the Mediterranean region, central Asia, India, Africa, and China.

5239

TAMARIX Linn., Sp. Pl., ed. 1, p. 270 (1753)

Flowers usually bisexual, occasionally unisexual. *Sepals* 4—5, rarely 6, free, small, ovate. *Petals* 6 or as many as the sepals, free or slightly connate at the base, longer than the sepals, oblong. *Disc* saucer-shaped, glandular-crenate, angled, or lobed. *Stamens* 4—10, rarely 11—12, inserted on the disc, sometimes longer than the petals; in female flowers abortive stamens very short and surrounding the base of the ovary; filaments free, terete; anthers elliptic. *Ovary* sometimes more or less flask-shaped and 3-angled, 1-chambered, with several to many ovules on parietal placentas; styles 3—4, rarely 2 or 5, shorter than the ovary, expanded at the apex. *Fruit* a 3- (rarely 2—4-) valved capsule. *Seed* with a terminal tuft of silky hairs; endosperm 0.

Shrubs or small trees; leaves minute and scale-like; inflorescence a spike or dense raceme; flowers white or rosy.

Species about 112, natives of southern Europe, Africa, central and tropical Asia, and east India; 1 species found in Namaqualand and South West Africa and also recorded from the Kenhardt district. (Type: *T. gallica* Linn.)

121. CANELLACEAE

Flowers bisexual, regular. *Sepals* 3, imbricate, persistent. *Petals* in 2 rows; outer 4—5, free, thick, imbricate, deciduous; inner 4—5, thin, imbricate, sometimes absent. *Stamens* 7—20, hypogynous, connate into a tube; anthers adnate to the outer surface of the staminal-tube, opening by longitudinal slits. *Ovary* superior, 1-chambered, with 2 to many ovules on 2—5 parietal placentas; style short, thick; stigmas 2—5. *Fruit* a berry. *Seeds* 2 or more, shining; embryo short, straight or curved; endosperm oily and fleshy.

Glabrous, often aromatic, trees; leaves alternate, simple, entire, gland-dotted; stipules 0; inflorescence a terminal or axillary cyme or flowers solitary.

Genera 4; species about 10, natives of western India, North and South America, Africa, and Madagascar.

NOTE.—The sepals are, by some authors, regarded as 3-bracts and the 2 rows of petals as a calyx and corolla respectively.—E. P. P.

5256 *WARBURGIA* Engl., Pflanzenwelt Ostafri., vol. C, p. 276 (1895)

Sepals 3, suborbicular. *Petals* 10, in 2 rows; the outer petals twice as long as the sepals, obovate or obovate-spathulate, imbricate, gland-dotted. *Stamens* 10; staminal-tube equalling or subequalling the petals; anthers sessile on the upper part of the tube, about as long as the staminal-tube, linear, with a fleshy apical appendage. *Ovary* ellipsoid, with the ovules in a single row on 5 placentas; style enclosed in the staminal-tube or just protruding; stigma subcapitate, truncate. *Fruit* (immature) with a blackish-green leathery skin with immersed glands.

Trees; leaves shortly petioled, oblong or oblong-elliptic, shining above; inflorescence a small axillary cyme or flowers solitary.

Species 3, all African; 1 species found in Natal and the northern Transvaal. (Type: *W. stuhlmannii* Engl.)

122. VIOLACEAE

Flowers bisexual, rarely with unisexual flowers on the same plant, regular or zygomorphic. *Sepals* 5, equal or unequal, imbricate. *Petals* 5, hypogynous or slightly perigynous, mostly unequal, with the anterior petal larger than and dissimilar from the rest and often spurred or saccate, imbricate or contorted. *Stamens* 5, hypogynous or slightly perigynous, usually in a ring round the ovary, often more or less connate, often with the two lower stamens spurred at the base; filaments often very short; anthers sometimes sessile, usually large, 2-theous, opening by longitudinal slits, rarely by apical pores, often with a large membranous appendage from the apex. *Ovary* superior, sessile, 1-chambered, with many, rarely 1—3, ovules and 3, rarely 4—5, parietal placentas; style usually simple, straight or curved, sometimes thickened above; stigma terminal or anterior. *Fruit* a capsule, rarely a berry. *Seed* with a short funicle, sometimes winged, tomentose, or glutinous; embryo often straight; cotyledons flat; endosperm fleshy, often copious.

Herbaceous perennials or shrubs, rarely annuals; leaves alternate, rarely opposite, simple, entire or rarely cut; stipules small or leafy; inflorescence a cymose raceme or panicle, rarely a simple raceme, or flowers axillary and solitary.

Genera 17; species about 460, natives of North and South America, the Sandwich Islands, New Guinea, New Zealand, Africa, and tropical and sub-tropical regions generally.

- | | |
|---|---------------------------|
| 1. Petals subequal | 1. <i>Rinorea</i> Linn. |
| Petals unequal; the lowest much larger than the others and often spurred and saccate at the base | 2 |
| 2. Sepals with ear-like lobes at the base | 3. <i>Viola</i> Linn. |
| Sepals without basal lobes | 2. <i>Hybanthus</i> Jacq. |

5262 1. RINOREA Aubl., Plant. Guian., Franc., vol. 1, p. 235, t. 93 (1775)

(*Alsodeia* Thouars)

Sepals small, subequal, ovate. *Petals* 5, free, subequal, sessile or very shortly clawed, sometimes much longer than the sepals, oblong. *Stamens* 5, free or more or less connate into a tube or ring; filaments sometimes short and broad; anthers oblong, sometimes longer than the filament, with an appendage at the apex which may be longer than the anther itself. *Ovary* with 1 to many ovules; style straight, terete, usually longer than the ovary; stigma simple. *Fruit* a capsule, sometimes globose. *Seed* subglobose, glabrous or hairy.

Trees or shrubs; leaves opposite or alternate, simple, often large, elliptic, elliptic-oblong, or lanceolate, often acuminate, entire or serrated; stipules small; inflorescence a terminal or axillary raceme or panicle or flowers solitary.

Species about 273, found in all tropical countries; 2 species in South Africa recorded from Zululand, Natal, through the Transkei to the Uitenhage district. (Type: *R. guianensis* Aubl.)

5271 2. HYBANTHUS Jacq., Enum. Pl. Carib., p. 2 (1760)

(*Ionidium* Vent.)

Sepals unequal, not or scarcely produced at the base. *Petals* free, unequal; the lowest petal much larger and differently shaped to the others, clawed, with the claw dilated and concave or shortly spurred or saccate at the base. *Stamens* 5, free or connate; filaments broad or linear; anthers broad, sometimes sessile, produced at the apex into a membranous appendage. *Ovary* sessile, with several ovules; style terete, incurved and club-shaped above, longer than the ovary. *Fruit* a capsule. *Seed* brown, ovoid-globose or ellipsoid, with a swollen hilum; testa somewhat thick, sometimes swelling and forming a glutinous mass when wetted, often faintly striate; embryo straight; cotyledons suborbicular or oblong; endosperm scanty or copious.

Herbs, sometimes undershrubs, sometimes with the stems from a woody rootstock; leaves alternate, rarely opposite, simple, elliptic or long-linear; stipules small, narrow; inflorescence a terminal raceme or flowers axillary, solitary or fascicled.

Species about 150, found in all tropical and subtropical countries; 9 or 10 species in South Africa, recorded from South West Africa, Bechuanaland, the Transvaal, Natal, through the Transkei to the Uitenhage and Humansdorp districts. (Type: *H. havanensis* Jacq.)

5274 3. VIOLA Linn., Sp. Pl., ed. 1, p. 933 (1753)

Sepals nearly equal, lanceolate or linear, usually produced at the base below the point of attachment into ear-like lobes. *Petals* unequal, obovate; the anterior petal spurred or saccate at the base; the rest shortly clawed. *Stamens* sometimes unequal, with the two lower often spurred at the base; anthers subsessile, with the connective produced into a membranous appendage. *Ovary* sessile, with few to many ovules; style almost straight, about as long as or longer than the ovary, flattened, club-shaped or variously dilated above;

stigma terminal or more or less recurved and anterior. *Fruit* a capsule. *Seed* ovoid-globose, often shining; embryo straight; cotyledons flat; endosperm copious.

Herbs, rarely undershrubs, sometimes trailing and rooting at the nodes; leaves alternate, simple, sometimes long-petioled, linear, ovate, sometimes cordate, sometimes crenate; stipules leaf-like, sometimes persistent; flowers axillary, 1- or rarely 2-nate.

Described species over 800, natives of tropical, subtropical, and temperate countries; 3 or 4 species in South Africa, found in the Transvaal, the south-western districts of the Cape Province to the Humansdorp district. (Type: *V. odorata* Linn.)

123. FLACOURTIACEAE

Plants sometimes dioecious. *Flowers* regular, bisexual or unisexual. *Sepals* 2—7, free or connate into a tube which is sometimes adnate to the ovary; lobes imbricate or valvate. *Petals* as many as the sepals, rarely more or 0, with or without a scale on the inner face, imbricated or contorted, deciduous. *Stamens* definite or indefinite, hypogynous, free or more or less connate; anthers 2-theous, opening by longitudinal slits, rarely by apical pores. *Ovary* superior, more rarely $\frac{1}{2}$ -inferior or inferior, 1-chambered, with 1 to many ovules on 2—8 parietal placentas, rarely ovules axile; style simple or styles free. *Fruit* a capsule or berry, 1 to many-seeded. *Seeds* usually small, sometimes furnished with an arillus; testa woody, leathery or chartaceous, sometimes hairy; embryo straight; cotyledons flat; endosperm fleshy, rarely thin or 0.

Armed or unarmed shrubs or trees; leaves alternate, rarely opposite or whorled, simple, entire or toothed; stipules present or 0; inflorescence a corymb, panicle, or raceme, or flowers terminal or axillary and solitary or fascicled.

Genera 79; species about 550, found in all warm countries, especially in the tropics.

- | | | |
|---|-------------------------------|---|
| 1. Leaves opposite | 5. <i>Pseudoscolopia</i> Gilg | 2 |
| Leaves alternate | | |
| 2. Ovary more or less completely 4-chambered, with 2 ovules in each chamber | 11. <i>Flacourtia</i> Comm. | |
| Ovary 1-chambered; if 2—3-chambered then flowers unisexual... .. | | 3 |
| 3. Petals with a fleshy gland on the inner face or staminodes petaloid with a fleshy gland | | 4 |
| Petals and staminodes, when present, without glands | | 5 |
| 4. Stamens numerous; staminodes petaloid with a large basal gland | | |
| | 1. <i>Rawsonia</i> Harv. | |
| Stamens 8—10; staminodes 0; petals with a gland on the inner face | 3. <i>Kiggelaria</i> Linn. | |
| 5. Receptacle pilose | 4. <i>Scolopia</i> Schreb. | |
| Receptacle glabrous | | 6 |
| 6. Stamens equalling the number of sepals | | 7 |
| Stamens more than the number of sepals | | 8 |
| 7. Sepals and stamens 5... .. | 6. <i>Gerrardina</i> Oliv. | |
| Sepals and stamens 7—9 | 7. <i>Homalium</i> Jacq. | |
| 8. Petals large, conspicuous, coloured... .. | 2. <i>Oncoba</i> Forsk. | |
| Petals, when present, small and resembling the sepals | | 9 |

- | | | |
|--|--------------------------------------|----|
| 9. Stamines present | 13. <i>Casearia</i> Jacq. | 10 |
| Stamens absent | ... | |
| 10. Petals 3—5 | 8. <i>Trimeria</i> Harv. | 11 |
| Petals 0 | ... | |
| 11. Flowers unisexual | 12. <i>Dovyalis</i> E. Mey. | 12 |
| Flowers bisexual | ... | |
| 12. Flowers solitary | 10. <i>Neumannia</i> A. Rich. | |
| Flowers clustered, rarely inflorescence a raceme | 9. <i>Xylosma</i> Forst. f. | |

5275 **1. RAWSONIA** Harv. & Sond., Fl. Cap., vol. 1, p. 67 (1859)

Flowers bisexual or unisexual by abortion. *Calyx* leathery, 4—5-parted; segments unequal, concave, imbricate, persistent. *Petals* 4—5, leathery, similar to the sepals but larger, unequal, concave, imbricate, deciduous. *Stamens* numerous, in several rows; the inner hypogynous; the outer attached to the base of the stamens; filaments linear; anthers linear, somewhat sagittate at the base; stamens large and somewhat similar to the petals, with a somewhat fleshy tumid area on the inner face. *Ovary* superior, 1-chambered, with a thick fleshy wall, with many ovules on 4—5 parietal placentas; style almost none; stigma subsessile, 4—5-angled. *Fruit* a light green globose berry about the size of a walnut. *Seed* globose; testa leathery; embryo straight; cotyledons thin, elliptic; endosperm fleshy, copious.

Shrub or small tree; leaves alternate, simple, shortly petioled, leathery, elliptic or oblong-elliptic, acuminate or shortly acuminate, toothed; stipules 0; flowers large, axillary, solitary or clustered.

Species 3, African; 1 species extends from the northern Transvaal, Zululand, and Natal to the Transkei. (Type: *R. lucida* Harv. & Sond.)

5284 **2. ONCOBA** Forsk., Fl. Aegypt. Arab., p. 103 (1775)
(*Xylothea* Hochst.)

Flowers bisexual with occasional unisexual flowers on the same plant. *Calyx* leathery; sepals 3—4, oblong or elliptic, free or cohering below, imbricate. *Petals* 5—20, exceeding the petals, often narrowed towards the base, imbricate. *Stamens* indefinite, free; filaments linear; anthers oblong or linear, with an apical appendage, basifixed, erect, opening at the sides. *Ovary* superior, 1-chambered, thick-walled, with 10 parietal placentas; style simple, thick; stigma various, sometimes capitate, laminated, or 4-lobed. *Fruit* the size of a small apricot or smaller, with a woody pericarp, sometimes furrowed, indehiscent, many-seeded. *Seeds* with a leathery testa; embryo straight; cotyledons flat, suborbicular; endosperm present.

Trees or shrubs, armed with spines or unarmed; leaves alternate, simple, shortly petioled, ovate-elliptic or elliptic, sometimes acuminate and serrated; inflorescence a raceme or flowers terminal or axillary, solitary or fascicled.

Species about 39, found in Africa and Brazil; 3 or 4 species occur in the northern Transvaal, Swaziland, Zululand, and Natal. (Type: *O. spinosa* Forsk.)

NOTE.—The genus *Xylothea* was described by Hochstetter in *Flora*, vol. 26, p. 69 (1843), being based on *Xylothea kraussiana* from Natal. Harvey, in *Flora Capensis*, vol. 1, p. 66 (1859), placed the species in the genus *Oncoba*, and Oliver, *Flora Tropical Africa*, vol. 1, p. 114 (1868), reduced *Xylothea* to *Oncoba*. Gilg, *Engl. Bot. Jahrb.*, vol. 40, p. 455 (1908), keeps the genus *Xylothea* distinct from *Oncoba*. After examining the available material in the National Herbarium there appears little doubt that all the South African species belong to the same genus.—E. P. P.

5296 3. KIGGELARIA Linn., Sp. Pl., ed. 1, p. 1037 (1753)

Plants dioecious. *Calyx* 5-parted; segments linear-oblong, valvate, deciduous, hairy. *Petals* 5, often very similar to the sepals, linear-oblong or elliptic, imbricate, each with a fleshy gland completely adnate to the inner face or the gland adnate at the base to the petals and free above, hairy. *Stamens* 8—10, in the centre of the male flower; filaments short; anthers hard and dry, 2-theous, opening by terminal pores. *Rudimentary ovary* 0. *Ovary*, sessile, subglobose, 1-chambered, with few to many ovules on 2—5 parietal placentas, hairy; style short and thick, divided above into 2—5 lobes. *Staminodes* none. *Fruit* a globose leathery several-seeded capsule; valves 2—5, hairy, sometimes tuberculate. *Seed* subglobose; testa somewhat woody; embryo straight; cotyledons flat, suborbicular; endosperm fleshy.

Unarmed shrubs or small trees; leaves alternate, simple, petioled, sometimes large, usually lanceolate, sometimes elliptic, usually toothed, sometimes discolorous; stipules 0; male inflorescence an axillary cyme with the flowers on long pedicels; female flowers pedicelled, solitary.

Species 7, all African; 3 species in South Africa, extending from the Transvaal and Natal, through the coastal belt to the Cape; also recorded from the Burghersdorp and Queenstown districts and the eastern Orange Free State. (Type: *K. africana* Linn.)

5304 4. SCOLOPIA Schreb., Gen., vol. 1, p. 335 (1789)

(*Phoberos* Lour.)

Flowers bisexual. *Calyx* persistent; segments 4—6, ovate, oblong, elliptic, or suborbicular, often ciliate and pubescent. *Petals* 4—6, somewhat similar to the sepals; linear, ovate, or oblong. *Disc* fleshy, with glands on the margins opposite the calyx-segments. *Stamens* many, in several rows within the margin of the disc; filaments often surrounded at the base with long hairs; anthers 2-theous, often apiculate at the apex. *Ovary* superior, often globose, 1-chambered, with few ovules on 3—4 parietal placentas; style simple; stigma subcapitate or 2—5-lobed. *Fruit* a fleshy 2—4-seeded globose berry. *Seeds* suborbicular; testa leathery; embryo straight; cotyledons flat, elliptic-oblong; endosperm fleshy or somewhat horny.

Armed or unarmed shrubs or small trees; leaves alternate, simple, lanceolate, obovate, ovate, elliptic, or elliptic-lanceolate, sometimes acuminate, entire or toothed; inflorescence a small axillary lax raceme, rarely a dense cylindric spike; flowers small.

Species about 34, natives of Africa, Asia, and Australia; 5 species in South Africa, extending from the Transvaal, Zululand, and Natal through the coastal belt to the Cape. (Type: *S. pusilla* (Gaertn.) Willd.)

5304a 5. PSEUDOSCOLOPIA Gilg, Engl. Bot. Jahrb., vol. 54, p. 343 (1917)

(*Pseudoscolopia* Phillips)

Flowers bisexual. *Calyx* of 4 segments which are valvate in bud and persistent. *Petals* 4, subsimilar to the sepals, imbricate in bud, persistent. *Stamens* many; filaments free; anthers erect in bud. *Ovary* superior, globose, 1-chambered, with 2 parietal placentas and a single ovule on each placenta, hairy; style terete, bilobed at the apex. *Fruit* a 2-valved capsule, ovoid, acuminate, tipped with the remains of the persistent style. *Seed* ellipsoid, covered with stellate hairs; embryo straight; cotyledons flat, somewhat obovate; endosperm sparse.

Small tree; leaves opposite, petioled, elliptic, serrate, rarely subentire; stipules 0; inflorescence a lax axillary cyme, shorter than the leaves.

Endemic species 1, recorded from Pondoland. (Type: *P. polyantha* Gilg)

5312 6. GERRARDINA Oliv., in Hook. Ic. Pl., pl. 1075 (1870)

Flowers bisexual. *Calyx-tube* campanulate; lobes 5, imbricate, unequal, with the 2 outer shorter and rounded and broadly elliptic. *Petals* 5, shorter than the calyx and alternating with the calyx-lobes, inserted on the margin of the disc, ovate, rounded, broadly cuneate at the base, deciduous. *Disc* basin-shaped, lining the calyx-tube. *Stamens* 5, opposite the petals, inserted on the margin of the disc; filaments terete; anthers ovate, with projecting connectives, with introse dehiscence. *Ovary* superior, 1-chambered, with 4 pendulous ovules; style short, thick, terete; stigma capitate, 2-lobed. *Fruit* dry, 1-seeded. *Seed* not seen.

Shrubs or small trees; leaves alternate, simple, elliptic, lanceolate, or ovate, sometimes acuminate, serrate; inflorescence a few-flowered axillary cyme on a long peduncle.

An African genus of 2 species; 1 species extending from the northern Transvaal to Pondoland. (Type: *G. foliosa* Oliv.)

5313 7. HOMALIUM Jacq., Enum. Pl. Carib., p. 5 (1760)
(*Blackwellia* Comm.)

Flowers bisexual. *Calyx-tube* turbinate; lobes 7—9, linear, sometimes hairy without, ciliate, persistent. *Petals* 7—9, inserted in the mouth of the calyx-tube, similar to the calyx-lobes but broader, persistent. *Stamens* as many as the petals and opposite to them, alternating with glands which are adnate to the base of the calyx-lobes; filaments terete; anthers small, didymous. *Ovary* semi-superior, adnate to the calyx-tube in the lower half, 1-chambered, with few to many ovules on 2—5-parietal placentas, hairy; styles 2—5, terete; stigmas simple or capitate. *Fruit* a semi-superior leathery capsule, 1- or few seeded, opening at the apex by 2—5 valves. *Seeds* not seen.

Shrubs or trees; leaves alternate, simple, shortly petioled, ovate, lanceolate, elliptic, suborbicular, or oblong, sometimes large, glandular-crenate or serrate, rarely entire; stipules small or rarely absent; inflorescence an axillary raceme or panicle.

Species about 220, found in all tropical countries; 3 species found in Natal, the Transkei to the East London district. (Type: *H. racemosa* Jacq.)

5315 8. TRIMERIA Harv., Gen. S. Afr. Pl. Suppl., p. 417 (1858)
(*Monospora* Hochst.)

Plants dioecious. *Male flowers*:—*Sepals* 3—5, scarcely imbricate, lanceolate or almost suborbicular. *Petals* 3—5, larger or smaller than the sepals, linear or obovate-spathulate, imbricate. *Disc* bearing marginal glands opposite each of the sepals. *Stamens* 9—12, perigynous, inserted in parcels of 3—4, alternating with the glands of the disc; filaments glabrous or hairy; anthers small, subglobose. *Female flowers*:—*Sepals* and *petals* as in the male. *Ovary* superior, 1-chambered, with 1—2 ovules on 3 parietal placentas; styles 3, short, persistent. *Fruit* a dry capsule, 1—2-seeded, 3-valved. *Seed* ellipsoid; testa leathery; embryo straight; cotyledons flat, suborbicular, with a small "bract" at the base and inserted at right angles to the cotyledons; endosperm scanty.

Shrubs or trees; leaves alternate, simple, shortly petioled, lanceolate or almost orbicular, with toothed margins and palmate venation; stipules 0 or large; inflorescence an axillary spike or panicle; flowers very small.

Species 9, all African; 3 species in South Africa extending from the northern Transvaal, Swaziland, through Zululand and Natal and the eastern districts to the Uniondale, Humansdorp, George, and Knysna districts. (Type: *T. trinervis* Harv.)

5320 9. XYLOSMA Forst. f., Prodr., p. 72 (1786)

Flowers unisexual or bisexual in the South African species. *Sepals* 4—5, scale-like, often ciliate, imbricate. *Petals* 0. *Disc* annular, surrounding the stamens, sometimes with large glands opposite the sepals. *Stamens* several or many; filaments free; anthers short, versatile. *Ovary* situated on the disc, 1-chambered, with 2 or more pendulous ovules on 2, rarely 3—6, parietal placentas; style thick, terete, entire or more or less divided; stigma dilated; rarely the stigma sessile and peltate-lobed. *Fruit* a 2—8-seeded berry. *Seeds* obovoid; cotyledons broad.

Trees or shrubs, often spiny; leaves alternate, simple, lanceolate or elliptic, usually toothed; flowers clustered in the axils of the leaves or rarely arranged in a short raceme.

Species about 95, found in almost all tropical countries; 1 species recorded from Zululand, the Stutterheim, Komgha, and Kingwilliamstown districts. (Type: *X. orbiculata* (Forst.) Forst. f.)

5326 10. NEUMANNIA A. Rich., in Sagra, Hist. Fis. Cuba, vol. 10, p. 96 (1845)
(*Aphloia* Benn.)

Flowers bisexual. *Sepals* 4—5, somewhat leathery, orbicular, concave, broadly imbricate. *Petals* 0. *Stamens* many, inserted outside or on a flat disc; filaments terete, longer than the sepals; anthers short, without appendages. *Ovary* sessile, superior, 1-chambered, with few or several ovules on a single parietal placenta; style very short; stigma broadly peltate.

Trees or shrubs; leaves alternate, simple, lanceolate, serrated or rarely incised; flowers axillary, sessile or shortly pedicelled.

Species 4; natives of Africa, the Mascarene and Seychelles Islands; 2 species in South Africa, found in the northern Transvaal.

5327 11. FLACOURTIA (Comm.) L'Hérit., Stirp. Nov., p. 59 (1785)

Flowers bisexual or with occasional unisexual flowers on the same plant. *Calyx* 4—7-partite or sepals free; segments or sepals sometimes unequal, ovate, ciliate, imbricate. *Petals* 0. *Male flowers*:—*Stamens* numerous; filaments terete, longer than the sepals; anthers small, elliptic or somewhat quadrate, sometimes subdidymous, not appendaged. *Ovary* 0. *Female flowers*:—*Stamens* 0 or few. *Ovary* surrounded by an annular or interrupted disc, usually more or less 4—8-chambered, with a thick wall, with 2 superposed ovules (the upper ascending, the lower pendulous) in each chamber; styles 4—8, short, thick, more or less radiating, persistent; stigmatic apices retuse or emarginate. *Fruit* a berry, 5—16-locular. *Seed* obovoid or subcompressed; testa bony, rough; embryo straight, not as long as the seed; cotyledons flat, ovate; endosperm present.

Trees or shrubs, often spiny; leaves alternate, simple, obovate or elliptic, crenate; inflorescence a terminal or axillary raceme or small panicle or flowers fasciated or female flowers often solitary.

Species about 50, found in Java, Sumatra, Malaya, Burma, New Guinea, China, Mauritius, Madagascar, and tropical Africa; 1 species occurs in Bechuanaland and the northern Transvaal. (Type: *F. ramontchi* L'Hérit.)

5328 12. DOVYALIS E. Mey. ex Arn., in Hook. Journ. Bot., vol. 3, p. 251 (1841)
(*Doryalis* E. Mey.; *Aberia* Hochst.)

Plants dioecious. *Male flowers*:—*Calyx* 4—7-parted; segments ovate, scarcely imbricate, hairy. *Petals* 0. *Stamens* 10—20, longer than the calyx, often

inserted on a disc composed of separate ellipsoid usually hairy glands; filaments linear; anthers oblong, erect, basifixed. *Female flowers*:—*Calyx* 5—7-parted, sometimes linear with stalked glands on the margins. *Ovary* superior, ovoid or somewhat compressed, 1—2- (more rarely 3-) chambered, with 1—6 ovules on 2 or more placentas; styles 2—7, sometimes shortly bilobed at the apex. *Fruit* a berry. *Seeds* sometimes obovate, often transversely ribbed, glabrous or woolly; testa leathery; embryo straight; cotyledons flat, elliptic, sometimes thin and pinnately veined; endosperm present.

Shrubs or small trees, often spiny; leaves alternate, simple, sessile or shortly petioled, obovate, elliptic, or ovate, entire or toothed; flowers axillary; the male fascicled; the female solitary.

Species about 34, natives of Africa, Madagascar; one species recorded from New Guinea; 7, possibly 8, species in South Africa, extending from the Transvaal, Zululand, and Natal, through the coastal belt to the Humansdorp, George, and Knysna districts. (Type: *D. rhamnoides* (Burch. ex DC.) Harv. = *D. zizphoides* E. Mey.)

5343

13. CASEARIA Jacq., Enum. Pl. Craib., p. 4 (1760)

Flowers bisexual. *Calyx-tube* short or subelongated or 0; lobes 4—6, suborbicular, concave, imbricate. *Petals* 0. *Stamens* 6—15, rarely 20—40, free or connate among themselves, hypogynous or inserted on the calyx-tube, or at the base of the calyx; filaments linear; connective of anthers sometimes penicillate at the apex; staminodes alternating with the stamens, sometimes oblong and hairy at the apex. *Ovary* superior, 1-chambered, with few to many ovules on 3—4 parietal placentas; style short; stigma capitate or peltate or stigmatic 3. *Fruit* a subfleshy or dry capsule, opening by 3—4 valves, few- to many-seeded. *Seeds* sometimes angled, with a fleshy arillus; testa chartaceous; embryo straight; cotyledons flat, elliptic or suborbicular; endosperm present.

Trees or shrubs; leaves alternate, simple, elliptic, entire, serrate or with subspinose teeth; stipules small; inflorescence an umbel or flowers fascicled or rarely solitary.

Species about 317, found in all tropical countries; 1 species in South Africa ranging from Zululand and Natal to the East London district.

124. TURNERACEAE

Flowers regular, bisexual. *Calyx* with a cylindric tube and 5 lobes or the sepals almost free, imbricate. *Petals* 5, free, inserted low down in the calyx-tube or in the mouth of the calyx-tube, sessile or long-clawed, contorted in bud. *Stamens* 5, alternating with the petals, inserted at the base of the calyx-tube, free; filaments linear; anthers 2-theous. *Ovary* superior, 1-chambered, with few to many ovules on 3 parietal placentas; styles 3, free, nearly entire or fringed at the apex. *Fruit* a loculicidal capsule, 3-valved, dehiscing throughout its whole length or only to the middle. *Seeds* with an aril; testa often brittle, sculptured; embryo straight; cotyledons flat; endosperm present.

Herbs, shrubs, or undershrubs; leaves alternate, simple, entire, crenate, lobed or pinnatifid, often with 2 glands at the base; stipules small or 0; inflorescence a cyme or raceme or flowers axillary, solitary or in few-flowered clusters.

Genera 7; species over 100, natives of Africa, America, Madagascar, the Malay Archipelago, and the Seychelles Islands.

- | | | | | | |
|---------------------------|-----|-----|-----|--------------------|---|
| 1. Sepals almost free | ... | ... | ... | 3. Piriqueta Aubl. | |
| Calyx-tube long-cylindric | ... | ... | ... | ... | 2 |

2. Petals long-clawed 1. *Wormskioldia* Thonn.
 Petals sessile in the mouth of the calyx-tube 2. *Streptopetalum* Hochst.

5355 1. **WORMSKIOLDIA** Thonn., in Schum. & Thonn., Beskr. Guineiske Pl., p. 165 (1827)

Calyx covered with glandular hairs; tube long-tubular; lobes 5, much shorter than the tube, oblong or lanceolate. *Petals* 5, longer than the calyx, inserted on the calyx-tube, with an obovate limb and a long narrow claw; claw with a scale on the lower portion, pilose near the base. *Stamens* 5, much shorter than the petals, hypogynous; filaments linear and thread-like; anthers linear or oblong. *Ovary* somewhat ellipsoid, 1-chambered, with few ovules; styles 3, linear, somewhat dilated and subfimbriate at the apex. *Fruit* a short or elongate capsule, resembling the silique of *Cruciferae*, opening by 3 valves. *Seeds* several, cylindric, ellipsoid or somewhat obovoid, with a lateral membranous arillus; testa sculptured; embryo straight; cotyledons flat, oblong; endosperm fleshy.

Glabrous or hispid herbs, rarely subshrubby, often from a deep woody root-stock; leaves alternate, sessile or petioled, linear or long-linear-lanceolate, entire, crenate or lobed; stipules minute or 0; inflorescence a few-flowered raceme; flowers yellow; bracts present.

Species 11, all African; 5 species in South Africa, recorded from the Transvaal, Bechuanaland, and South West Africa. (Type: *W. heterophylla* Schum. & Thonn.)

5356 2. **STREPTOPETALUM** Hochst., in Flora, vol. 24, p. 665 (1841)

Calyx covered with glandular hairs; tube long-cylindric; lobes lanceolate. *Petals* inserted in the mouth of the calyx-tube, obovate, not clawed. *Stamens* inserted near the base of the calyx-tube; filaments linear, about as long as the calyx; anthers oblong-linear. *Ovary* somewhat ovate in outline, with several ovules on 3 parietal placentas, hairy; styles 3, filamentous, several times longer than the ovary, subpenicillate at the apex. *Fruit* a 3-valved capsule, somewhat oblong in outline, hispid. *Seed* slightly curved; testa brittle, sculptured; embryo straight; cotyledons flat, oblong; endosperm fleshy.

Subherbaceous plants; leaves alternate, simple, sessile, lanceolate, entire or crenate; stipules 0; inflorescence a few-flowered axillary raceme.

An African genus of 4 species; 1 species recorded from South West Africa and the Transvaal. (Type: *S. serratum* Hochst.)

NOTE.—Placed under the genus *Wormskioldia* by some authors.—E. P. P.

5357 3. **PIRIQUETA** Aubl., Hist. Pl. Gui. Franc., vol. 1, p. 298, t. 117 (1775)

Sepals 5, free or united at the base, lanceolate, hairy. *Petals* alternating with the sepals, scarcely longer than the sepals, more or less oblong, twisted in aestivation, deciduous. *Stamens* shorter than the petals; filaments linear; anthers oblong. *Ovary* with several ovules on 3 parietal placentas, hairy; styles 3, about as long as the ovary, minutely multifid at the apex. *Fruit* a small globose 3-valved hairy capsule. *Seed* slightly curved, with a lateral aril; testa brittle, sculptured; embryo straight; cotyledons flat, oblong; endosperm fleshy.

Herbs, shrubs, or undershrubs, often hispid; leaves alternate, simple, sessile, lanceolate, serrate or subpinatifid, without basal glands but sometimes with small glands on the margins; inflorescence a cyme or flowers solitary.

Species about 38, natives of America, Africa, and Madagascar; 1 species occurs in the Transvaal. (Type: *P. villosa* Aubl.)

125. PASSIFLORACEAE

Flowers bisexual or unisexual. *Calyx-tube* short or elongated, sometimes 0; lobes or sepals 5, imbricate. *Petals* 5, rarely absent, free or shortly united, inserted in the sinuses of the calyx-lobes or on the calyx-tube. *Corona* simple or in more than 1 row, of erect to radiating threads, scales, or annular, sometimes absent. *Glands* sometimes present. *Stamens* 5 or more, hypogynous or perigynous, free or united into bundles; anthers 2-theous. *Ovary* superior, 1-chambered, sometimes stalked, with several or many ovules on 3—5 parietal placentas; styles as many as the placentas or styles connate below and branched above or style almost 0; stigmas often capitate. *Fruit* a capsule or berry, often loculicidally 3-valved. *Seed* often ovate, usually compressed, with a fleshy aril; testa pitted; embryo large, straight; endosperm present.

Herbs, shrubs, or trees of various habits, sometimes with large tuber-like stems, often furnished with tendrils; leaves alternate, petioled, simple or compound, often glandular at the apex of the petiole; stipules 0 or in pairs; inflorescence a raceme or cymose panicle, or flowers solitary; flowers often showy.

Genera 11; species about 400, natives of Africa, Madagascar, America, Australia, and New Zealand.

Flowers bisexual	...	...	...	1. <i>Trypsohemma</i> Harv.
Flowers unisexual	...	...	...	2. <i>Adenia</i> Forsk.

5369 1. *TRYPHOSTEMMA* Harv., Thes. Cap., vol. 1, p. 32, t. 51 (1859)

Flowers bisexual. *Calyx-tube* short or 0, sometimes more or less truncate at the base; lobes 5—6, oblong-lanceolate or oblong-linear, obtuse. *Petals* 0, or petals 5, equalling or shorter than the calyx-lobes, linear, elliptic, or obovate-elliptic. *Corona* simple or double, membranous; the outer corona, when 2 present, fimbriate. *Stamens* 5, free or adnate to the corona; filaments linear, sometimes broadened at the base; anthers oblong or linear, sometimes sagittate at the base. *Ovary* sessile, with 3 or few ovules on 3—4 parietal placentas; styles 3—4 or style simple and 3-fid, as long as or longer than the ovary; stigmas capitate. *Fruit* a 3—4-valved capsule, 3 to few-seeded. *Seeds* compressed or ellipsoid, with or without an arillus; embryo straight; cotyledons large, thin, oblong; endosperm fleshy.

Herbs or shrubs, sometimes with a large woody rootstock, with or without tendrils; leaves alternate, petioled or subsessile, cordate, lanceolate, or elliptic, entire, slightly bilobed or digitately 3—5-lobed, with the lobes sometimes linear, entire, dentate or serrate; stipules subulate, filiform or large and foliaceous; flowers axillary, solitary or in clusters of 2—3, erect or drooping.

Species 16, all African; 5 species in South Africa found in South West Africa, the Transvaal, and Natal. (Type: *T. sandersoni* Harv.)

5370 2. *ADENIA* Forsk., Fl. Aegypt. Arab., p. 77 (1775)
(*Modecca* Lam.; *Ophiocaulon* Hook. f.)

Flowers unisexual. *Male flowers*:—*Receptacle* usually narrowly cylindric. *Calyx-tube* obconical, salver-shaped, saucer- or ring-shaped; lobes usually longer than the tube, linear-oblong, ovate, or ovate-oblong. *Petals* arising from the sinuses of the calyx-lobes or inserted about half-way down the calyx-tube, usually shorter than the calyx-lobes, linear, oblong, elliptic-obovate, subspathulate or oblanceolate, sometimes crenate-dentate. *Corona* 0 or of slender processes. *Glands* 5 or 0. *Stamens* equalling or shorter than the

petals, free or connate, adnate to the calyx-tube or arising from the centre of the receptacle; filaments linear-subulate. *Rudimentary ovary* usually present. *Female flowers*.—*Receptacle* funnel-shaped. *Calyx-tube* campanulate or subcampanulate or 0; lobes longer or shorter than the tube, oblong-ovate, ovate to ovate-obircular. *Petals* inserted on the calyx-tube, oblong or elliptic-oblong. *Corona* a circle of filiform processes sometimes fimbriately lobed, or 0. *Glands* present or absent. *Staminodes* present, usually connate at the base. *Ovary* sessile or stipitate, usually ovoid, with several ovules on 3 parietal placentas, very rarely placentas 4; style evident or 0, 3-branched, very rarely 4-branched; stigmas usually fleshy, papillate. *Fruit* reddish, yellowish, or brownish, sometimes as large as a hen's egg, usually leathery, splitting into 3 valves. *Seed* usually flattened, regularly pitted.

Main axis often tuber-like, sometimes very large; branches sometimes armed with spines; leaves simple or digitately compound, entire or lobed, kidney-shaped, oblong-ovate, linear-lanceolate, cordate-ovate, sometimes hastate, rarely peltate, with 2 glands at the apex of the petiole, sometimes with glands on the underside of the leaf; stipules acicular; inflorescence a 1- to many-flowered cyme or flowers clustered; peduncle of inflorescence sometimes ending in a tendrill.

Species about 50, found in most tropical countries; 8 species in South Africa, recorded from South West Africa, Bechuanaland, the Transvaal, Zululand, Natal to the Komgha district. (Type: *A. venenata* Forsk.)

126. ACHARIACEAE

Plants monoecious. *Sepals* 3—5, usually linear, sometimes adnate to the corolla-tube. *Corolla-tube* campanulate; lobes 3—4, about as long as the tube or much shorter. *Stamens* 3—5, inserted at the base of the corolla-tube or in throat of the corolla-tube; anthers often didymous, 2-theous, sometimes cohering. *Glands* inserted at the base of the corolla-tube. *Ovary* superior, 1-chambered, with few to several ovules on 3—5 parietal placentas; style 3—5-lobed, with the lobes sometimes 2-fid. *Fruit* a capsule, enclosed in the persistent corolla. *Seed* subglobose, pitted or tuberculed; embryo straight; cotyledons flat; endosperm present.

Herbaceous climbers, subherbaceous undershrubs or acaulescent, without or with tendrills; leaves alternate, simple, sometimes palmately lobed, sometimes all radical, crenate or serrate; stipules present or 0; inflorescence a short raceme or flower solitary or 2-nate.

Genera 3; species 4, all natives of South Africa.

- | | | |
|---|-----------------------------|---|
| 1. An acaulescent herb with radical leaves | 3. <i>Guthriea</i> Bolus | |
| Plant not acaulescent... | ... | 2 |
| 2. Male flowers solitary or 2-nate; corolla, especially in the female flower, | | |
| winged | 2. <i>Acharia</i> Thunb. | |
| Male flowers in short racemes; corolla not winged; corolla-lobes ciliate | 1. <i>Ceratosicyos</i> Nees | |

5374 1. CERATIOSICYOS Nees, in Eckl. & Zeyh., Enum., p. 281 (1836)

Male flowers.—*Sepals* 4—5, linear, spreading. *Corolla-tube* campanulate; lobes 4—5, about as long as the tube, ovate-oblong, ciliate, cohering together by the cilia, giving the corolla an urceolate appearance. *Stamens* 5, inserted at the base of the corolla-tube, alternating with the same number of narrowly ellipsoid glands which are adnate to the corolla-tube; filaments linear, slightly dilated upwards; anthers oblong, truncate at the apex, cohering.

Rudimentary ovary 0. *Female flowers*:—*Calyx* very inconspicuous. *Corolla* as in the male. *Staminodes* 0. *Glands* 5, about $\frac{3}{4}$ as long as the corolla-tube, linear. *Ovary* shortly stalked, almost cylindric, with several ovules on 4—5 parietal placentas; styles 4, short, 2-lobed at the apex. *Fruit* an elongated ribbed capsule, 4—5-valved, several-seeded. *Seeds* subglobose; testa tubercled and narrowly winged above; embryo straight; cotyledons ovate, distinctly veined; endosperm copious, fleshy.

A slender herbaceous, nearly glabrous, climber, with or without tendrils; leaves alternate, usually long-petioled, palmately 5—7-lobed with the lobes acuminate and serrate, very rarely ovate, simple and entire, or cordate at the base; male flowers in short racemes; female flowers solitary.

Endemic; species possibly 2, recorded from South West Africa, the northern Transvaal, Zululand, Natal, and through the coastal area to the Humansdorp and Knysna districts; also recorded from the Queenstown district. (Type: *C. ecklonii* Nees)

5375 2. ACHARIA Thunb., Prodr. Fl. Cap., vol. 1, p. 14 (1794)

Male flowers:—*Sepals* 3—4, linear, recurved. *Corolla* hairy; tube campanulate; lobes 3—4, about as long as the tube, ovate, slightly winged or keeled. *Glands* 3—4, at the base of the corolla-tube, ciliate. *Stamens* 3—4, free; filaments linear; anthers oblong, didymous. *Ovary* 0. *Female flowers*:—*Sepals* 5, larger than in the male, lanceolate, hairy. *Corolla* larger than in the male, hairy; tube campanulate, winged; lobes ovate. *Glands* at the base of the corolla-tube. *Ovary* subsessile, somewhat compressed, with 3—5 ovules on 3—5 parietal placentas, hairy; style about as long as the ovary, 3—5-lobed. *Fruit* a capsule, enclosed in the persistent corolla, 3—5-valved, terminated by a persistent style. *Seed* subglobose, pitted, narrowly winged on one side, hairy.

A small herbaceous undershrub; leaves alternate, simple, petioled, deeply palmately lobed, with the lobes toothed; stipules linear; flowers axillary, solitary or 2-nate, nodding or pendulous.

Endemic; species 1, extending from the Uitenhage district to Natal. (Type: *A. tragodes* Thunb.)

5376 3. GUTHRIEA Bolus, in Hook. Ic. Pl., t. 1161 (1876)

Male flowers:—*Sepals* 5, almost as long as the corolla, linear, adnate to the corolla for almost the whole of their length. *Corolla* herbaceous, profusely veined; tube deeply campanulate; lobes 5, very much shorter than the tube, ovate, obtuse, reflexed. *Glands* 5, thick, fleshy, ovate, inserted at the base of the corolla-tube. *Stamens* 5, inserted in the throat of the corolla; filaments shorter than the anthers, flattened; anthers didymous, with the thecae attached to a broad connective; thecae pectinate. *Female flowers*:—*Sepals* about $\frac{1}{2}$ as long as the corolla, linear, adnate to the corolla for $\frac{1}{2}$ their length. *Corolla-tube* campanulate; lobes 4—5, much shorter than the tube, more or less transversely oblong, erect. *Glands* 4—5, fleshy, obovate or elliptic, inserted at the base of the corolla-tube. *Ovary* sessile, with 10—15 ovules on 4—5 parietal placentas; style broadly linear, 4—5-lobed. *Fruit* a 4—5-valved capsule, enclosed in the corolla. *Seeds* several, ellipsoid, furnished with an arillus; embryo straight.

An acaulescent herb; leaves discolorous, radical or rosulate, alternate, simple, petioled, ovate or cordate, crenate; flowers axillary, solitary, pedicelled.

Endemic; species 1, recorded from the Oudeberg in the Graaff-Reinet district, the Wittebergen in the Barkly East district, and from the Mont-aux-Sources in Natal. (Type: *G. capensis* Bolus)

127. LOASACEAE

Flowers bisexual, regular. *Calyx-tube* adnate to the ovary, often ribbed; lobes 4—5, imbricate or contorted, persistent, often enlarged in fruit. *Petals* 4—5, free, inserted in the throat of the calyx-tube, sessile or clawed, flat or concave, induplicate-valvate. *Scales* petaloid, cucullate, alternating with the petals, appendaged or scales absent. *Stamens* many, rarely few, inserted with the petals, often collected in bundles opposite the petals; filaments sometimes beaded; anthers often didymous, 2-theous, opening by longitudinal slits; staminodes present or absent. *Ovary* inferior or nearly completely so, 1—3-chambered, with 1 to many pendulous ovules from the apex of the ovary-chambers or on parietal placentas; style entire or 2—3-fid; stigma simple or capitate. *Fruit* a capsule, 1—3-locular, 2—5-valved, often ribbed. *Seed* often minute; embryo straight; endosperm present or absent.

Herbs or rarely woody, mostly clothed with rough hairs; leaves alternate or opposite, entire or variously divided; stipules 0; inflorescence a raceme or cyme, rarely a head, or flowers solitary; bracteoles present.

Genera 13, species about 230, principally natives of South America.

5388 KISSENIA R. Br., ex Th. Anders., in Journ. Linn. Soc., vol. 5, suppl. 1, p. 43 (1860)

Calyx-tube obconic, 10-ribbed, densely villous; lobes 5, equal, much longer than the tube, oblong-spathulate, enlarged in fruit. *Petals* 5, shorter than the calyx-lobes, concave, hairy without. *Scales* 3, petaloid; 2 oblong, concave, reflexed and obscurely 3-toothed at the apex, hairy within; 1 scale lanceolate, bent at the apex, glabrous. *Stamens* many, some of the outer stamens with a hairy scale at the base and with or without anthers; filaments linear, all or mostly beaded. *Ovary* inferior, 2—3-chambered, with one, rarely 2, apical pendulous ovules in each chamber; the portion of the ovary projecting above the calyx-tube flattened and densely villous; style simple, somewhat angled; stigma simple. *Fruit* woody, ribbed, 2—3-locular, 1—3-seeded, indehiscent, crowned with the enlarged calyx-lobes, densely villous. *Seed* compressed; embryo straight; cotyledons flat, thick, fleshy, oblong; endosperm 0.

A robust undershrub, usually pale, very scabrous and covered with brittle hairs armed with minute recurved barbs; leaves alternate, simple, petioled, ovate, ovate-lanceolate or orbicular, usually more or less distinctly 3-lobed, usually toothed; inflorescence a scorpioid cyme; bracts present.

Species 2; 1 found in southern Arabia and Somaliland, the other in South West Africa, the Prieska, Gordonias, and Hay districts. (Type: *K. spathulata* R. Br.)

NOTE.—I do not find five scales as mentioned by Dandy in *Kew Bulletin*, p. 175 (1926).—E. P. P.

128. BEGONIACEAE

Plants monoecious. *Flowers* regular or zygomorphic. *Male flowers*.—*Perianth-segments* 2 or more, petaloid or sepaloid; the 2 outer often opposite, sepaloid, valvate; the inner petaloid or 0. *Stamens* numerous, free or connate; filaments usually short; anthers 2-theous, linear-oblong or club-shaped, sometimes produced at the apex. *Ovary* rudimentary or 0. *Female flowers*.—*Perianth-segments* 2—5, rarely more, petaloid. *Staminodes* 0 or sometimes represented by glands. *Ovary* inferior or rarely $\frac{1}{2}$ -inferior, usually 2—4-chambered, rarely 1-chambered, mostly angled or winged, with many ovules on axile placentas; styles 2—5, free or connate; stigmas 2-fid or

twisted, usually papillose. *Fruit* a capsule or berry, many-seeded. *Seeds* small; testa reticulated; embryo straight; endosperm scanty or 0.

Herbs or undershrubs, often succulent; stems often swollen at the nodes; leaves alternate, very rarely subwhorled, entire, lobed, or digitately partite; stipules free, often caducous; inflorescence mostly an axillary cyme; flowers usually showy; bracts and bracteoles present.

Genera 4; species about 800, chiefly natives of America, Asia, and Africa.

NOTE.—The outer whorl called "sepals" and the inner whorl "petals" by some authors.—E. P. P.

5397

BEGONIA Linn., Sp. Pl., ed. 1, p. 1056 (1753)

Male flowers.—*Outer perianth-lobes* 2, sepaloid, sometimes forming a spathe; inner 2, petaloid, rarely more or 0. *Stamens* free or connate; filaments linear; anthers oblong or subglobose, sometimes appendaged at the apex, often opening by 2 lateral pores. *Female flowers*.—*Perianth-segments* often 6, sometimes 4, with the 2 outer larger and sepaloid. *Ovary* usually 3-chambered, more rarely 2-, 4-, or 5-chambered, usually 3-winged, with many axile ovules; styles very often as many as the ovary-chambers, free or connate at the base or almost 0; stigmas often 2-fid, sometimes hairy. *Fruit* very often a membranous capsule, 3-angled and unequally 3-winged, very rarely terete or 4-angled, rarely baccate. *Seeds* small, oblong in outline, reticulated; embryo straight; endosperm 0.

Herbaceous, often with fleshy stems, sometimes stemless, sometimes with tubers; leaves alternate, simple, entire, often on long petioles, entire, lobed or partite, irregularly toothed; stipules often large.

Described species about 500, with the same distribution as the family; 8 species in South Africa, recorded from the northern Transvaal, Swaziland, Zululand, and Natal, through the coastal region to the East London district. (Type: *B. obliqua* Linn.)

129. CACTACEAE

Flowers bisexual, regular, very rarely irregular. *Calyx-tube* adnate to the ovary; limb very short or produced into a tube above the ovary; lobes many, often numerous and in many rows, scale-like, foliaceous, or petaloid. *Petals* many, rarely few; often numerous and in many rows, free or connate into a short tube; the outer not distinct from the calyx-lobes. *Stamens* very often numerous and in many rows, inserted in the calyx-throat, free or adnate to the base of the petals; anthers 2-theous. *Ovary* inferior, 1-chambered, with many ovules on 3 or more parietal placentas; style terminal, simple; stigmas as many as the placentas. *Fruit* a fleshy berry or rarely dry, smooth or more or less spiny. *Seeds* many, smooth and shining or tuberculate; testa often black; embryo straight or curved; endosperm present or absent.

Herbs, shrubs, or trees, rarely epiphytes; stems depressed, globose, columnar, terete or angled or flattened, often copiously furnished with spines; leaves usually rudimentary; flowers often very large and showy, solitary or clustered, often axillary or lateral.

Genera 21; species about 1,500, mostly South American.

5416

RHIPSA LIS Gaertn., Fruct., vol. 1, p. 137, t. 28 (1788)

Calyx-tube not produced above the ovary; lobes 3 to many, very short, scale-like. *Petals* 6—10, oblong, spreading. *Stamens* numerous; filaments subequal; anthers short. *Ovary* exserted or immersed, smooth, very often glabrous; style divided into 2—6 or many radiating stigmas. *Fruit* a subglobose berry, crowned with the persistent perianth, sometimes with a few spines. *Seeds* almost pear-shaped; cotyledons thick; endosperm 0.

Fleshy shrubs, sometimes epiphytic; stems terete or leaf-like, often jointed; leaves scale-like; flowers lateral, very rarely terminal.

Species about 50, natives of Africa, America, and Asia; 1 species found in Natal and at Port St. Johns. (Type: *R. cassytha* Gaertn.)

130. GEISSOLOMACEAE

Flowers regular, bisexual. *Perianth* 4-partite to the base, persistent; segments broadly elliptic, shortly acuminate, imbricate in bud, with the side segments inside the other two. *Stamens* 8, perfect, free, inserted at the base of the perianth, slightly shorter than the perianth; filaments linear; anthers elliptic, bilobed at the base, 2-theous, with the connective scarcely manifest. *Ovary* superior, 4-chambered, narrowly winged, with 2 collateral pendulous ovules in each chamber, rarely 1 ovule abortive; style pyramidal, narrowing upwards, longer than the ovary, easily separable into 4 parts, terminated by 4 very small stigmas. *Fruit* a capsule, 4-locular, dehiscing by 4 longitudinal sutures running down the wings of the loculi. *Seed* by abortion solitary in each loculus, whitish, smooth, shining; testa brittle; embryo straight; cotyledons flat, linear; endosperm present.

A low shrub; leaves decussate, sessile, ovate, cordate at the base, silky when young, soon glabrous; stipules 0; flowers apparently solitary, in reality in short much-reduced bracteate axillary racemes along the upper twigs; bracts 4 or 6, the 2 lower smaller than the 4 upper, persistent; bracteoles sometimes present as small lanceolate scales in the axils of the bracts.

Genus 1; species 1, South African.

5422 GEISSOLOMA Linde. ex Kunth, in *Linnaea*, vol. 5, p. 678 (1830)

Characters of the family.

Only recorded from the Swellendam and Riversdale districts. (Type: *G. marginatum* (Linn.) Kunth=*Penaea marginata* Linn.)

131. PENAEACEAE

Flowers regular, bisexual. *Perianth-tube* cylindric, tubular, or subcampanulate; lobes 4, equal, shorter than the tube, valvate or reduplicate-valvate in the bud. *Stamens* 4, inserted in the throat of the perianth-tube, alternating with the perianth-lobes, usually shorter than the lobes; filaments usually shorter than the anthers, rarely almost absent; anthers 2-theous with the thecae usually shorter than the thick connective. *Ovary* superior, 4-chambered, with 2—4 erect basal ovules in each chamber or with 2 erect and 2 pendulous ovules in each chamber; style terete or with 4 wings or angles; stigma capitate and obscurely 4-lobed or arranged on 4 cruciform lobes at the apex of the style. *Fruit* a 4-valved capsule, often with the valves awned with the persistent portion of the style. *Seeds* by abortion 1—2 in each loculus; funicle and raphe separable from the seed; endosperm 0.

Small shrubs or undershrubs of an ericoid habit; leaves decussate; often imbricate, flat, rarely needle-like; stipules small or 0, sometimes glandular; inflorescence a much-reduced raceme usually approximated at the ends of the branches, more rarely a terminal head, flowers sometimes solitary; bracts leaf-like or differing from the leaves in colour or form; bracteoles opposite in one or more pairs, sometimes caducous.

Genera 5; species 25, mostly confined to the south-western districts of the Cape Province.

- | | | |
|---|---------------------------------|---|
| 1. Style winged or angled | 3. <i>Penaea</i> Linn. | |
| Style terete | | 2 |
| 2. Bracts surrounding the flowers becoming glutinous with age | 5. <i>Sarcocolla</i> Kunth | |
| Bracts not glutinous | | 3 |
| 3. Ovary-chambers with 2—4 basal erect ovules in each | 4. <i>Brachysiphon</i> A. Juss. | |
| Ovary chambers with 4 ovules (2 erect and 2 pendulous) | | 4 |
| 4. Perianth-tube long-cylindric | 1. <i>Endonema</i> A. Juss. | |
| Perianth-tube oblong | 2. <i>Glischrocolla</i> Endl. | |

NOTE.—Although the family has comparatively recently been monographed in the *Flora Capensis* it would repay a further revision. The section *Eupenaea* of the genus *Penaea* forms a natural group characterized by the winged styles; the section *Stylapterus* having a non-winged style is in that respect similar to *Brachysiphon*, but differs in the perianth-lobes being reduplicate-valvate. At one time 3 of the species now placed under *Penaea* sect. *Stylapterus* were considered to be generically distinct from *Penaea*. In the following descriptions I have considered the genus *Penaea* as being comprised of those species placed in the section *Eupenaea* and have transferred the species comprising the section *Stylapterus* to the genus *Brachysiphon* and enlarged the characters of *Brachysiphon* to include those species with a valvate aestivation of the perianth-lobes. The other alternatives are to resuscitate the genus *Stylapterus* which would then only differ from *Brachysiphon* by having a valvate aestivation or to amend the description of *Penaea* so that plants with non-winged styles and reduplicate-valvate aestivation could be included.—E. P. P.

- 5423 1. *ENDONEMA* A. Juss., in Ann. Sc. Nat., vol. 3, ser. 6, p. 26, t. 3 (1846)

Perianth-tube long-cylindric; lobes much shorter than the tube, lanceolate or oblong, keeled on the upper half of the inner face, becoming reflexed as the flower fades, valvate in bud. *Stamens* longer or shorter than the perianth-lobes; filaments flattened, slightly narrowing upwards, about as long as the anthers; anthers versatile, with the thecae somewhat shorter than the connective. *Ovary* angled, 4-chambered, with 2 erect and 2 pendulous ovules in each chamber; style terete, as long as or longer than the perianth-tube; stigma obscurely 4-lobed. *Fruit* a 4-valved capsule, with the valves acuminate. *Seed* brownish; funicle thick and fleshy at point of attachment and then produced within the testa and bearing the tegmen with enclosed embryo from its apex, free within the testa; embryo truncate at one end, not apparently separable into 2 cotyledons.

Small, erect shrubs or undershrubs; branches 4-angled or sub-4-angled in the younger parts; leaves decussate, sessile, elliptic or linear; flowers solitary or apparently solitary, mainly in the axils of the upper leaves; bracts in 2 or 3 pairs below each flower, sometimes lanceolate and about three-quarters as long as the perianth-tube or obovate and much shorter than the perianth-tube and caducous.

Endemic; species 2, extending from the Caledon to the Uitenhage district. (Type: *E. latiflora* (Linn. f.) Gilg=*E. thunbergii* A. Juss.)

- 5424 2. *GLISCHROCOLLA* Endl., Gen. Suppl., vol. 4, p. 74 (1847)

Perianth-tube oblong, 4-ribbed; lobes erect, becoming reflexed in the faded flower, much shorter than the tube, elliptic-ovate, reduplicate-valvate in bud. *Stamens* inserted in the mouth of the perianth-tube, shorter than the perianth-lobes; filaments shorter than the anthers; anthers cordate-ovate; thecae with a membranous margin and longer than the connective. *Ovary* with 2 erect and 2 pendulous ovules in each chamber; style terete, as long as or longer than the perianth-tube; stigma globose-capitate, obscurely 4-lobed. *Fruit* and *seed* not seen.

A shrub 12—15 inches high, with dichotomous branching; leaves ovate, close-ranked, passing into the bracts at the apex of the flowering shoots; inflorescence

a congested terminal raceme; bracts reddish, obovate-spathulate; bracteoles 2, linear.

Endemic; species 1, recorded from the French Hoek Mountains and Sir Lowry's Pass. (Type: *G. lessertiana* (A. Juss.) A. DC.)

5425

3. PENAEA Linn., Sp. Pl., ed. 1, p. 111 (1753)

Perianth-tube cylindric or ovate-cylindric, sometimes semi-inflated and veined, subequal to the bracts; lobes much shorter than the tube, ovate, sometimes acuminate, erect, valvate in bud. *Stamens* shorter, as long as, or longer than the perianth-lobes, shorter than the anthers, flattened; anthers with a thick fleshy connective, with the thecae obliquely placed on the inner side of the connective near the base. *Ovary* 4-angled, often square in cross-section, with 2—4 erect basal ovules in each chamber; style with 4 longitudinal membranous wings, easily separable into 4 parts, arranged in a cruciform manner at the apex of the wings. *Fruit* a 4-valved capsule awned with the persistent portions of the style. *Seed* sometimes 1 by abortion in each loculus, brown, oblong in outline, with the base of the funicle fleshy and the funicle extending to the top of the seed; embryo truncate at the base.

Low much-branched undershrubs; branches 4-angled in the younger parts; leaves ovate, oblong, elliptic, or lanceolate, sometimes acuminate; flowers either lateral in the axils of leaf-like bracts or approximated at the tips of the branches in the axils of the upper leaves; bracteoles usually 2, shorter and narrower than the bracts, linear or spatulate, sometimes 0.

Endemic; species 6, found mostly in the south-western districts of the Cape Province and extending to the Uitenhage district. (Type: *P. mucronata* Linn.)

5426 4. BRACHYSIPHON A. Juss., Ann. Sc. Nat., vol. 3, series 6, p. 24, t. 2 (1846)

Perianth-tube cylindric, ovate-cylindric, or subcampanulate, longer or subequal to the bracts; lobes erect or reflexing only in the faded flowers, sometimes much shorter than the tube, suborbicular, elliptic, obovate, sometimes acuminate, sometimes keeled on the inner face, valvate or reduplicate-valvate. *Stamens* shorter than the perianth-lobes; filaments terete, shorter than the anthers, sometimes anthers almost sessile; anther-thecae on a thick connective and usually shorter than it. *Ovary* with 2—4 basal erect ovules in each chamber, very rarely 2 of the 4 ovules pendulous, glabrous or minutely scabrous; style about as long as the perianth-tube, usually terete, rarely flattened and 2-lobed at the apex, sometimes easily separable; stigma normally capitate and obscurely 4-lobed. *Fruit* and *seed* not seen.

Low, much-branched undershrubs; branches 4-angled or sub-4-angled in the younger parts; leaves elliptic or obovate, rarely acicular; inflorescence a raceme in the axils of the upper leaves, usually gathered in many-flowered terminal clusters, rarely solitary; bracts usually coloured, leaf-like, obovate, acuminate, slightly longer than the perianth-tube; bracteoles 2, spatulate, acuminate, as long as or nearly as long as the bracts but narrow; bracts and bracteoles sometimes pectinate.

Endemic; species 11, confined to the south-western districts of the Cape Province. (Type: *B. imbricatus* A. Juss.)

5427 5. SARCOCOLLA Kunth, Linnaea, vol. 5, p. 678 (1830)

Perianth-tube tubular; lobes erect, becoming reflexed as the flower opens, broadly elliptic or suborbicular, shorter than the tube, reduplicate-valvate in bud. *Stamens* exerted at the top of the perianth-tube, projecting for their whole length; filaments oblong, thick, longer than the anthers; anthers oblong, with the thecae extending the whole length of the connective. *Ovary*

with 2—4 ovules in each ovary chamber; style longer than the perianth-tube, terete; stigma capitate, 4-lobed. *Fruit* and *seed* not seen.

Much-branched undershrub; upper branches often covered with a whitish waxy bloom; leaves flat, sessile, usually tipped with a more or less distinct gland; stipules small, pyramidal or auriculate; often glandular; inflorescence a terminal head or flowers solitary and terminal; bracts coloured, imbricate, becoming resinous in the fruit; bracteoles sometimes ciliate.

Endemic; species 1, confined to the south-western districts of the Cape Province. (Type: *S. tetragona* (Berg.) Salter=*S. squamosa* Endl.)

NOTE.—Salter (*Journ. S. Afr. Bot.*, vol. 6, p. 42) states that the ovary-chambers are always 4-ovuled; in flowers I dissected I found they sometimes may be 2-ovuled as mentioned in the *Flora Capensis*—E. P. P.

132. OLINIACEAE

Flowers bisexual. *Calyx-tube* adnate to the ovary; limb produced beyond the ovary, tubular, truncate or obscurely 4—5-lobed. *Petals* 5, rarely 4, inserted in the throat of the calyx-tube and usually shorter than the calyx-tube, obovate-spathulate or linear-spathulate, alternating with minute scales, valvate. *Stamens* 5, rarely 4, inserted in the calyx-tube below the scales; filaments very short; anthers small, didymous, 2-theous. *Ovary* inferior, 3—5-chambered, with about 3 pendulous ovules in each chamber; style straight; stigma thickened. *Fruit* dry, rarely subfleshy, globose, about the size of a small pea. *Seeds* somewhat obovoid; testa brown, thick, somewhat warty; cotyledons linear, irregularly convolute; endosperm 0.

Trees or shrubs, with 4-angled branchlets; leaves opposite, petioled, entire, obovate, elliptic, or lanceolate, often acuminate; stipules 0; inflorescence a short axillary trichotomous cyme, arranged in lax racemes, shorter than the subtending leaf; bracts opposite, as long as or shorter than the flowers, often deciduous.

Genus 1; species 8, all African.

5428 OLINIA Thunb., in Roem. Arch., vol. 2, p. 4 (1799)

Characters of the family.

Species 3 in South Africa, extending from the northern Transvaal, through the coastal belt to the Cape; also recorded from the Queenstown district. (Type: *O. cymosa* (Linn. f.) Thunb.)

133. THYMELAEACEAE

Plants sometimes dioecious. *Flowers* bisexual in all the South African species. *Calyx-tube* often cylindric; often enlarged below and articulated above the enlarged portion; lobes 4—5. *Petals* 4, 5, 8, 12, or many or 0, in the mouth of the calyx-tube, fleshy or membranous, large or small, sometimes surrounded by stiff hairs. *Stamens* 4, 8, or 10, usually in 2 series; anthers 2-theous, often longer than the filaments. *Scales* present or absent below the stamens. *Disc* present or absent. *Ovary* superior, 1—2-chambered, with a single lateral pendulous anatropous ovule in each chamber; style often inserted laterally on the ovary; stigma capitate, globose, or simple, often penicillate or covered with glandular hairs. *Fruit* dry or fleshy, indehiscent. *Seed* solitary; embryo straight; cotyledons fleshy; endosperm fleshy, copious or 0.

Genera about 43, with about 400 species, found in Africa, the Mediterranean region, and Australia; a few found in Asia and North and South America.

- | | |
|---|----------------------------------|
| 1. Ovary 2-chambered, rarely 3-chambered; inflorescence an umbel | |
| Ovary 1-chambered; inflorescence a head, spike or flowers solitary ... | 2 |
| 1. <i>Peddiea</i> Harv. | |
| 2. Stamens as many as the calyx-lobes ... | 3 |
| Stamens twice as many as the calyx-lobes... | 5 |
| 3. Petals surrounded by stiff hairs ... | 8. <i>Struthiola</i> Linn. |
| Petals not surrounded by hairs ... | 4 |
| 4. Leaves opposite; petals 8 ... | 5. <i>Pseudognidia</i> Phill. |
| Leaves alternate; petals 4 ... | 6. <i>Basutica</i> Phill. |
| 5. A small tree; inflorescence a peduncled head, surrounded by 2—6 bracts forming an involucre ... | 13. <i>Dais</i> Linn. |
| Shrubs or shrublets ... | 6 |
| 6. Inflorescence a head surrounded by coloured, membranous, not foliaceous, bracts ... | 4. <i>Arthrosolen</i> C. A. Mey. |
| Inflorescence, if a head, surrounded by foliaceous herbaceous bracts ... | 7 |
| 7. Scales present at the base of the stamens ... | 8 |
| Scales absent ... | 9 |
| 8. Flowers solitary at the apex of the branches or in the axils of the upper leaves ... | 10. <i>Cryptadenia</i> Meissn. |
| Inflorescence usually a bracteate or ebracteate head, rarely a short, dense spike or flowers solitary ... | 11. <i>Lachnaea</i> Linn. |
| 9. Petals many, each surrounded by stiff hairs ... | 7. <i>Struthiolopsis</i> Phill. |
| Petals as many or twice as many as the calyx-lobes or none ... | 10 |
| 10. Calyx-lobes 5, very rarely 4; petals as many as the calyx-lobes very rarely absent ... | 3. <i>Lasiosiphon</i> Fresn. |
| Calyx-lobes 4; petals as many or twice or 3 times as many as the calyx-lobes or 0 ... | 11 |
| 11. Stigma globose, mop-like; leaves not membranous | 12. <i>Passerina</i> Linn. |
| Stigma simple, if subglobose then leaves membranous ... | 12 |
| 12. Leaves not membranous; inflorescence usually bracteate | 2. <i>Gnidia</i> Linn. |
| Leaves membranous; inflorescence ebracteate | 9. <i>Englerodaphne</i> Gilg |

5434 1. PEDDIEA Harv., in Hook. Journ. Bot., vol. 2, p. 265 (1840)

Calyx-tube cylindric or subtubular, ribbed, naked in the throat, deciduous; lobes 4—5, spreading, much shorter than the tube, ovate. *Stamens* 8—10, in 2 whorls, inserted on the upper portion of the calyx-tube; anthers subsessile, linear, slightly curved. *Disc* at the base of the calyx-tube, surrounding the ovary, cup-shaped, entire or irregularly lobed on the margin. *Ovary* shortly stalked, usually 2-chambered, rarely 3-chambered, with a single pendulous ovule in each chamber, glabrous or hairy above; style terete, as long as the ovary; stigma capitate or more or less saucer-shaped. *Fruit* not enclosed in the perianth, fleshy, about the size of a small pea. *Seed* usually solitary; testa papery; embryo straight; cotyledons thick and fleshy; radicle projecting as a point at the base of seed.

Glabrous shrubs; leaves alternate, subsessile, elliptic or lanceolate, sometimes acuminate, entire; inflorescence a few-flowered terminal umbel.

Species 8, all African; 1 species in South Africa, extending from the northern Transvaal, Swaziland, Zululand, and Natal to the Komgha district. (One record from Victoria Park, Port Elizabeth, may be a cultivated specimen.) (Type: *P. africana* Harv.)

5435

2. *GNIDIA* Linn., Sp. Pl., ed. 1, p. 358 (1753)

Calyx-tube long, cylindric or tubular-campanulate, usually articulated near the base, usually hairy, sometimes glabrous; lobes 4, much shorter than the tube, oblong or obovate. *Petals* 4, 8, or absent, membranous or fleshy, flat or terete, sometimes very small, shorter than the calyx-lobes, oblong, quadrate or linear, sometimes hairy. *Stamens* 8 in 2 series (in one species the upper series represented by filaments only); the upper series in the mouth of the calyx-tube; the lower series in the throat of the calyx-tube or lower down; filaments usually shorter than the anthers. *Disc* sometimes present and surrounding the ovary. *Ovary* obovoid or oblong in outline, 1-chambered, with a single ovule; glabrous or hairy; style inserted laterally, terete, from $\frac{1}{3}$ — $\frac{2}{3}$ as long as the calyx-tube; stigma usually simple, sometimes flattened or 2-lobed, usually penicillate. *Fruit* dry, enclosed in the persistent base of the calyx-tube. *Seed* with scanty endosperm, rarely endosperm thick and fleshy or endosperm 0.

Small or large shrubs, often heath-like; leaves opposite or alternate; inflorescence usually a terminal sessile head, more rarely a spike or the flowers solitary and axillary; bracts present or 0.

Species about 100, chiefly African, a few found in Madagascar; about 60 species in South Africa, mostly massed in the south-western districts of the Cape Province, but a few species extend to Namaqualand and South West Africa, to the north-eastern Transvaal and to parts of the High Veld. (Type: *G. pinifolia* Linn.)

5435a

3. *LASIOSIPHON* Fresn., in Flora, vol. 21, p. 602 (1838)

(Descr. emended)

Calyx-lobes 5, very rarely an occasional flower with 4 calyx-lobes. *Petals* as many as the calyx-lobes very rarely absent. *Stamens* twice as many as the calyx-lobes. Other characters as in *Gnidia*.

Small shrubs; leaves usually opposite; inflorescence usually a peduncled head surrounded by foliaceous bracts, more rarely heads sessile.

Species about 50, chiefly African; a few species found in Madagascar and India; about 30 species in South Africa, mainly found on the High Veld and Middle Veld, but a few species extending into Griqualand East and extending to the Alexandria district of the Cape Province. (Type: *L. glaucus* Fresn.)

5435b

4. *ARTHROSOLEN* C. A. Mey., in Bull. Phys-Math. Acad.

Petersb., vol. 1, p. 359 (1843)

(Descr. emended)

Calyx-lobes 5, rarely 4. *Petals* 0, very rarely present. *Stamens* twice as many as the calyx-lobes. Other characters as in *Gnidia*.

Small shrubs with rod-like branches; leaves alternate, linear or acicular; inflorescence a peduncled head, surrounded by coloured membranous bracts; flowers usually surrounded by hairs.

Species 4 in South Africa, widely distributed. (Type: *A. polycephalus* C. A. Mey.)

5435c

5. *PSEUDOGNIDIA* Phill., Journ. S. Afr. Bot., vol. 10, p. 63

(1944)

Calyx-tube long-cylindric, slightly widened above, subglobose at the base and articulated above the globose portion, pilose; lobes 4, lanceolate, much shorter

than the tube. *Petals* 8, fleshy, shorter than the calyx-lobes, linear. *Stamens* 4, inserted in the upper part of the calyx-tube; filaments much shorter than the anthers; anthers linear, with an apical gland which is soon deciduous. *Ovary* somewhat ovate in outline, 1-chambered, with a single ovule, glabrous; style inserted laterally, filamentous, about $\frac{3}{4}$ as long as the calyx-tube; stigma simple, with a few glandular hairs.

A small shrub covered with silky hairs; leaves opposite, elliptic or oblong-elliptic; flowers solitary and axillary in the uppermost leaves, forming a pseudohead.

Endemic; species 1, found in the south-western districts of the Cape Province and extends as far eastwards as the George and Knysna districts. (Type: *P. anomala* (Meissn.) Phill. = *Gnidia anomala* Meissn.)

5435d 6. BASUTICA Phill., Journ. S. Afr. Bot., vol. 10, p. 64 (1944)

Calyx-tube more or less funnel-shaped, pilose; lobes 4, oblong-elliptic. *Petals* 4, fleshy, shorter than the calyx-lobes, oblong. *Stamens* 4, fixed about half-way down the calyx-tube; anthers oblong, longer than the filaments. *Ovary* slightly ellipsoid, 1-chambered, with a single ovule, hairy above; style filamentous, about $\frac{3}{4}$ as long as the calyx-tube; stigma simple, minutely hairy.

A shrub; leaves alternate, ericoid; flowers solitary and axillary in the upper leaves.

Endemic; species 1, found on the high mountains of the Drakensberg in Natal and Basutoland. (Type: *B. aberrans* (C. H. W.) Phill. = *Gnidia aberrans* C. H. W.)

5435e 7. STRUTHIOLOPSIS Phill., Journ. S. Afr. Bot., vol. 10, p. 64 (1944)

Calyx-tube long-cylindric; slightly widened at the base and articulated above the widened portion, pilose; lobes 4, ovate, much shorter than the tube. *Petals* many, somewhat fleshy, terete, shorter than the calyx-lobes, surrounded by stiff hairs. *Stamens* 8, in 2 rows. *Ovary* elliptic, slightly hairy above; style filamentous, about $\frac{3}{4}$ as long as the calyx-tube; stigma lanceolate, hairy.

A small shrub; leaves alternate, linear or lanceolate, pustulate on the surface, pilose, especially when young; flowers solitary and axillary in the upper leaves.

Endemic; species 1, found on the mountains between Caledon and Elim in the Cape Province. (Type: *S. pulvinata* (Bolan) Phill. = *Gnidia pulvinata* Bolan)

5436 8. STRUTHIOLA Linn., Mant., p. 4 (1767)

Calyx glabrous or hairy; tube cylindric, sometimes slightly inflated above; lobes 4, much shorter than the tube, ovate, suborbicular, lanceolate or linear. *Petals* 4, 8, or 12, fleshy, subterete, shorter than the calyx-lobes, surrounded by stiff hairs. *Stamens* 4, inserted deep in the throat of the calyx-tube; anthers subsessile, linear, sometimes with an apical appendage. *Disc* 0. *Ovary* more or less oblong in outline, 1-chambered, with a single ovule, glabrous; style thread-like, inserted laterally on the ovary, from $\frac{1}{2}$ as long to almost as long as the calyx-tube; stigma simple, usually penicillate with short hairs. *Fruit* dry, included in the persistent base of the calyx. *Seed* with scanty endosperm.

Heath-like shrubs or undershrubs; leaves opposite or more rarely alternate, small, more or less imbricate; flowers sessile, usually in the axils of the upper leaves, solitary, rarely geminate; bracteoles 2, usually ciliate.

Endemic; species 41, extending from the Van Rhynsdorp to the Uitenhage and Albany districts; also recorded from Pondoland, Calvinia, and Little Namaqualand. (Type: *S. virgata* Linn.)

5438 **9. ENGLERODAPHNE** Gilg, in Engl. Bot. Jahrb., vol. 19, p. 274 (1895)

Calyx glabrous or hairy; tube cylindric; lobes 4, ovate or lanceolate. *Petals* 8, membranous, linear or oblong, almost as long as the calyx-lobes. *Stamens* 8, in two series; the upper series inserted in the throat of the calyx-tube; the lower series in the upper part of the calyx-tube; filaments very short; anthers linear, longer than the filaments. *Ovary* sessile, 1-chambered, with a solitary ovule, with long somewhat stiff hairs on the upper portion; style inserted laterally on the ovary, terete, about $\frac{1}{2}$ as long or less than the calyx-tube; stigma simple or subglobose.

Large shrubs or small trees; leaves membranous, opposite, lanceolate, ovate, lanceolate-elliptic, or oblong-elliptic; inflorescence a head or spike; bracts 0.

An African genus of 3 species, all of which are found in South Africa and extend from the north-eastern Transvaal, through Zululand, and Natal to the East London district. (Type: *E. leiosiphon* Gilg)

5459 **10. CRYPTADENIA** Meissn., in Linnaea, vol. 14, p. 404 (1840)

Calyx, hairy; tube cylindric or urceolate below and campanulate above or cylindric throughout; lobes 4, elliptic or ovate, almost as long as or longer than the tube. *Petals* 0. *Stamens* 8, in a single row, of 2 different lengths, inserted in the mouth of the calyx-tube or lower down in the tube; filaments free or sometimes adnate to the calyx-tube, linear; anthers oblong, shorter than the filaments. *Scales* 8, in a single row at the base of the stamens. *Ovary* sessile, elliptic-oblong, 1-chambered, with a single ovule, glabrous; style inserted laterally, terete, sometimes filiform and hairy; stigma globose or clavate, more rarely simple. *Fruit* dry, enclosed in the thinly membranous base of the calyx. *Seed* with fleshy endosperm.

Much-branched heath-like shrubs; leaves decussate, linear; flowers solitary at the apex of the branches or in the axils of the upper leaves; bracts 2.

Endemic; species 5, extending from the Clanwilliam to the Bredasdorp district; also found in the Ceres district. (Type: *C. grandiflora* Meissn.)

5460 **11. LACHNAEA** Linn., Sp. Pl., ed. 1, p. 360 (1753)

Calyx hairy; tube cylindric, dilated below, shorter or longer than the lobes; lobes 4, equal or unequal with one lobe much longer than the other 3 and lanceolate or linear-lanceolate. *Stamens* 8, often of unequal lengths, inserted in the mouth of the calyx-tube, in the zygomorphic flowers adnate to the calyx-lobes; filaments linear; anthers subglobose, shorter than the filaments. *Scales* 8, below the stamens. *Ovary* usually oblong in outline, 1-chambered, with a solitary ovule; style inserted laterally, terete and thickened above or thread-like, usually longer than the calyx-tube; stigma subglobose, covered with numerous processes. *Fruit* dry, enclosed in the persistent base of the calyx-tube. *Seed* with fleshy endosperm.

Shrubs or shrublets, sometimes slender, often heath-like; leaves opposite or scattered, sometimes 4-ranked, oblanceolate, spatulate, elliptic, or linear; inflorescence a bracteate or ebracteate head, sometimes large, rarely flowers solitary or arranged in a short dense spike.

Endemic; species 19, extending from the Clanwilliam to the Uitenhage district; also recorded from the Ceres district. (Type: *L. eriocephala* Linn.)

5461 **12. PASSERINA** Linn., Sp. Pl., ed. 1, p. 559 (1753)

(*Chymococca* Meissn.)

Calyx-tube usually flask-shaped; lobes 4, spreading, nearly as long as the tube. *Petals* 0. *Stamens* 8, unequal in length, subequalling or shorter than

the calyx-lobes. *Scales* 0. *Ovary* sessile, ovoid, 1-chambered, with a solitary ovule; style inserted laterally; stigma mop-like, closing the mouth of the calyx-tube. *Fruit* dry, enclosed in the usually persistent base of the calyx-tube; pericarp membranous or fleshy. *Seed* with a black crustaceous testa and the micropyle forming a curved beak; embryo straight; cotyledons fleshy, plano-convex; endosperm fleshy.

Ericoid shrubs; branches slender, pubescent, tomentose or woolly when young; leaves opposite, decussate, small and narrow, concave or closely involute, lined with woolly hairs; inflorescence a spike or subhead, usually terminal; flowers small, reddish or yellowish; bracts present; bracteoles 0.

An African genus of 15 species; 1 species in Southern Rhodesia; the South African species mostly massed in the south-western districts of the Cape Province and extend through the eastern coastal belt into the eastern mountain region to the north-eastern Transvaal. (Type: *P. filiformis* Linn.)

5465 13. DAIS Linn., Sp. Pl., ed. 2, p. 556 (1762)

Calyx hairy; tube cylindric, often slightly curved; lobes 5, much shorter than the tube, lanceolate. *Stamens* 10, of different lengths, inserted on the calyx-tube and partly adnate to it; free portion of filaments terete; anthers bright yellow, oblong, shorter than the filaments. *Disc* fleshy, hypogynous, cupular, surrounding the base of the ovary, unequal-sided. *Ovary* sessile, more or less elliptic in outline, 1-chambered, with a solitary ovule, with long hairs above; style terete, longer than the calyx-tube; stigma green, globose, covered with glandular hairs. *Fruit* dry, enclosed in the base of the calyx. *Seed* black, ovoid, testa crustaceous, pustulate; embryo straight; cotyledons fleshy; endosperm none.

Large shrubs or small trees; leaves opposite or scattered, often collected at the ends of the branches, elliptic; inflorescence a dense peduncled terminal head; flowers pink; bracts 2—6, broad, forming an involucre.

Species 2, 1 in Madagascar and 1 in South Africa, extending from the northern Transvaal, through Natal and the eastern districts to the Komgha and Kingwilliamstown districts. (Type: *D. cotinifolia* Linn.)

134. LYTHRACEAE

Flowers regular, rarely irregular, usually bisexual, usually 4—6-merous, more rarely 3—16-merous. *Calyx-tube* shallow, or tubular, campanulate, or urceolate; lobes usually valvate; appendages alternating with the calyx-lobes, evident or 0. *Petals* inserted in the throat of the calyx-tube and alternating with the calyx-lobes, evident or 0. *Stamens* inserted on the calyx-tube, more or less remote from the petals, very rarely just below the petals, as many as the sepals or fewer or more numerous; anthers 2-theous, dorsi-rarely basi-fixed. *Ovary* superior, 2—6-chambered, very rarely 1-chambered, with many to numerous ovules in each chamber; style simple or 0; stigma small, capitate, pointed, or rarely bilobed. *Fruit* a capsule, dehiscing in various ways, rarely indehiscent. *Seeds* small; embryo straight; endosperm 0.

Annual or perennial herbs, undershrubs, shrubs, or trees; leaves mostly decussate, rarely whorled or alternate; stipules 2—10 or more, various or 0; inflorescence a cyme, more rarely a panicle or flowers solitary.

Genera 24, with over 450 species, numerous in warm regions, scarce in temperate regions, absent in the arctic regions.

- | | |
|---|---|
| 1. Stems herbaceous or woody at the base only; leaves not dotted; seeds | |
| not winged | 2 |
| Stems woody; leaves marked with black dots, rarely without dots but | |
| then seeds with a thick wing | 5 |

- | | | |
|---|-------------------------------|---|
| 2. Calyx tubular | 3. Lythrum Linn. | |
| Calyx semiglobose, campanulate, or urceolate | | 3 |
| 3. Fruit at first opening by a small operculum, then irregularly split | 5. Nesaea Comm. | |
| Fruit not opening by an operculum | | 4 |
| 4. Fruit a 2—4-valved septical capsule | 1. Rotala Linn. | |
| Fruit opening transversely by an irregular split | 2. Ammannia Linn. | |
| 5. A small shrub... .. | 5. Nesaea Comm. | |
| Small trees | | 6 |
| 6. Calyx in bud produced into a long beak; petals long-clawed with the blade toothed | 6. Rhynchochalyx Oliv. | |
| Calyx not long-beaked in the bud; petals shortly clawed; blade not toothed | 4. Galpinia N. E. Br. | |

5473 1. **ROTALA** Linn., Mant., vol. 2, p. 143 (1771)

Flowers 3—6-merous, sometimes dimorphic. *Calyx* scarious or membranous rarely herbaceous, semi-globose, campanulate or urceolate-tubular, sometimes 4-angled; lobes 3—6, much shorter than the tube, without an appendage or sometimes with a setiform appendage. *Petals* persistent, caducous, or 0. *Stamens* 1—6, free. *Ovary* incompletely 2—4-chambered, with many, usually small, ovules in each chamber; style evident or almost none. *Fruit* a septical 2—4-valved capsule. *Seeds* small.

Annual or rarely perennial herbs, aquatic or found in damp places; leaves decussate or whorled, rarely alternate, simple; flowers small, axillary and solitary or rarely grouped into a terminal spike or raceme, very rarely in an umbel; bracteoles usually 2, rarely 0.

Species about 40, natives of Asia, Africa, Madagascar, Australia, and America; 3 species in South Africa, recorded from South West Africa and British Bechuanaland. (Type: *R. ramosior* (L.) Koehne *Ammannia ramosior* L.)

5474 2. **AMMANNIA** Linn., Sp. Pl., ed. 1, p. 119 (1753)

Flowers typically 5-merous, here and there 4—6 merous. *Calyx* herbaceous, campanulate or urceolate, 8-nerved, with appendages or appendages absent. *Petals* 0 or 1—4, fugacious, obovate or rounded. *Stamens* 2—8, very rarely up to 11 in 4-merous flowers, inserted on the calyx-tube. *Ovary* sessile, incompletely 2—4-locular, rarely 5-locular or in one species 1-locular; style terete, longer than the calyx-tube or 0; stigma sometimes capitate. *Fruit* a globose or ellipsoid capsule, included in the calyx-tube or exerted, opening transversely; placenta globose. *Seeds* numerous; embryo straight; cotyledons flat; endosperm 0.

Herbs, found in damp places; stems and branches more or less 4-angled; leaves decussate, rarely subalternate, sessile, often cordate at the base; inflorescence a short, dense axillary cyme.

Species about 20, natives of Africa, Asia, Australia, America, and Europe; 4 or 5 species in South Africa found in South West Africa, the Transvaal, Natal to the Kei mouth. (Type: *A. latifolia* Linn.)

5476 3. **LYTHRUM** Linn., Sp. Pl., ed. 1, p. 446 (1753)

Flowers 4—6-merous, more rarely 8-merous. *Calyx* tubular, rarely broadly campanulate, with evident appendages, rarely appendages much reduced; lobes very small. *Petals* much longer than the calyx-lobes, linear, rarely

absent, alternating with the petals, and situated in the mouth of the calyx-tube are small concave structures. *Stamens* 4—12, rarely 1, inserted on the calyx-tube. *Ovary* sessile or very rarely shortly stalked, oblong in outline, incompletely 2-chambered; style shorter than the calyx-tube, rarely almost absent; stigma capitate. *Fruit* a 2-valved capsule with the valves often subbilobed. *Seeds* few to many.

Annual or perennial herbs, rarely subshrubby; leaves decussate, whorled, or alternate; flowers solitary or in few-flowered cymes.

Species 24, natives of America, Europe, Asia, Africa, and Australia; 3 species in South Africa, 1 species extending from the Cape to the Uitenhage district, the other 2 confined to the Transvaal. (Type: *L. hyssopifolia* Linn.)

5480 4. GALPINIA N. E. Br., Kew Bull., p. 345 (1894)

Flowers 5—6-merous. *Calyx* membranous; tube campanulate or subglobose; lobes about as long as the tube, ovate, appendaged. *Petals* present or absent, deciduous, clawed, ovate-lanceolate, acute. *Stamens* 5—6, affixed in the mouth of the calyx-tube; filaments terete, spirally twisted; anthers suborbicular; thecae somewhat separate. *Ovary* subsessile, 2-chambered, with many ovules in each chamber; style terete; stigma pointed or subcapitate and hairy. *Fruit* a capsule, enclosed within the persistent calyx. *Seeds* flattened, somewhat concave, narrowly winged; embryo straight; cotyledons elliptic; endosperm 0.

Small trees; leaves shortly petioled, opposite, elliptic; stipules small, caducous; inflorescence a terminal and axillary panicle.

Endemic; species 2, recorded from the Barberton district of the Transvaal, Swaziland, Zululand, and Natal. (Type: *G. transvaalensis* N. E. Br.)

5486 5. NESAEA Comm. ex Juss. Gen., p. 332 (1789)

Flowers 4—8-merous. *Calyx* herbaceous, turbinate-campanulate, campanulate, urceolate, or semi-globose; appendages 0, or short, or much longer than the calyx-tube. *Petals* 1—8, deciduous, or 0. *Stamens* 4—23, in 1—2 rows. *Ovary* sessile, completely 2—5-chambered, with numerous ovules in each chamber; placentas often globose; style shorter or longer than the calyx-tube, terete; stigma capitate or pointed. *Fruit* a globose or ellipsoid capsule, enclosed in the calyx, at first opening by a small operculum and then irregularly cut. *Seeds* small.

Annual or perennial herbs, undershrubs or shrubs, with more or less 4-angled stems; leaves decussate or rarely subdecussate, or whorled, or sometimes spiral, sessile or very shortly petioled; flowers axillary, solitary or arranged in cymes, clusters, or head-like groups; bracts and bracteoles present.

Species 44, natives of Africa, Australia, Madagascar, eastern India, and South America; 13 species in South Africa, found in the Transvaal, Zululand, and Natal; also recorded from Griqualand East, the Komgha and Humansdorp districts, the eastern Orange Free State, and South West Africa.

5495 6. RHYNCHOCALYX Oliv., in Hook. Ic. Pl., t. 2348 (1894)

Flowers bisexual, regular. *Calyx* when in bud ovoid-globose and produced into a conical beak, deeply 6-fid; tube disc-like; lobes lanceolate, acute. *Petals* 6, alternating with the calyx-lobes, narrowly clawed, with an expanded membranous lobed limb which is cordate at the base. *Stamens* 6, opposite the petals; filaments subterete, as long as the anthers, glabrous; anthers oblong or broadly elliptic, 2-theous. *Ovary* 2-chambered, with many ovules in sub-2-rows on an axile placenta, produced into a short conical style; stigma subcapitate. *Fruit* unknown.

A small tree; leaves opposite, shortly petioled, elliptic or oblong-elliptic, obtuse or subobtuse, entire; inflorescence a many-flowered panicle, terminal or axillary; flowers small, pedicelled; bracts absent.

Endemic; species 1, recorded from Murchison in Natal. (Type: *R. lawsonioides* Oliv.)

NOTE.—The specimen on which the genus was founded was collected by the late Dr. Medley Wood in April 1884 and appears not to have been collected since. E. Koehne in *Das Pflanzenreich*, 4, 216, p. 272 (1903), excluded the genus from the family *Lythraceae*, but a subsequent examination by T. A. Sprague and C. R. Metcalfe, see *Kew Bulletin*, p. 392 (1937), confirmed Oliver's placing it in *Lythraceae*.—E. P. P.

135. LECYTHIDACEAE

Flowers bisexual, regular or irregular. *Calyx-tube* ovoid or turbinate, not or scarcely produced beyond the ovary; lobes 4—6, rarely 2—3, valvate or slightly imbricate. *Petals* 4—6, rarely 2—3, equal or unequal, free or united into a campanulate tube. *Stamens* numerous, in several series; filaments united at the base; anthers 2-theous, usually basifixed, opening by longitudinal slits. *Disc* within the stamens, annular or wanting. *Ovary* inferior or semi-inferior, 2- or more-chambered, with 1 to many axile ovules; style mostly simple; stigma simple or subcapitate, sometimes divided into 4 lobes. *Fruit* woody, fibrous, or fleshy, indehiscent or with an operculum at the apex. *Seeds* without endosperm; embryo divided or entire.

Trees or shrubs, leaves alternate, simple, sometimes with large glands on the margin; stipules 0; inflorescence a raceme or interrupted spike or flowers solitary; flowers usually large and showy.

Genera 18; species about 300, natives of the Dutch East Indies, India, Australia, South America, and Africa.

5506 BARRINGTONIA Forst., Char. Gen., p. 75, t. 28 (1776)

Calyx leathery; tube ovoid or turbinate, not or scarcely produced above the ovary; lobes 2—4, unequal, elliptic. *Petals* somewhat leathery, 4, very rarely 5 or 6, elliptic, attached to the ring at the base of the stamens. *Stamens* numerous, in several rows; filaments linear, connate at the base; anthers small. *Ovary* 2—4-chambered, with 2—6 ovules in each chamber; style terete, longer than the stamens; stigma simple, truncate. *Fruit* fleshy, more or less 4-angled or terete; 1-locular, crowned with the persistent calyx. *Seed* solitary; embryo not separable into cotyledons and radicle.

Trees; leaves alternate, crowded at the ends of the branches, sometimes large obovate, with entire or crenate-serrate margins.

Species about 110, mostly massed in Burma, Malaya, New Guinea, Java, and the Fiji Islands, rare in Australia and Africa; 1 species recorded from Natal. (Type: *B. speciosa* Forst.)

136. RHIZOPHORACEAE

Flowers very often bisexual. *Calyx-tube* more or less adnate to the ovary, rarely free; limb produced above the ovary or cut into 3—14 lobes down to the ovary; lobes usually valvate. *Petals* free, as many as the calyx-lobes, very often shorter than them, sessile or clawed, sometimes enveloping the stamens, emarginate, 2-fid, or much cut at the apex. *Stamens* 2—4 times as many as the petals, very rarely the same number, perigynous or epigynous; filaments almost as long as or longer than the petals or very short; anthers 2-theous, very rarely many-theous, oblong or lanceolate, sometimes with an appendage at the apex, opening by longitudinal slits. *Ovary* very often inferior,

1. Each petal enwrapping 2 stamens; petals not lacerated or divided above 2
Stamens free from the petals; petals lacerated or divided above 3. *Cassipourea* Aubl.

2. Calyx 4—5-lobed; anthers almost sessile 1. *Rhizophora* Linn.
Calyx more than 5-lobed; filaments nearly as long as the petals 2. *Bruguiera* Lam.

Trees or shrubs; leaves leathery, opposite, simple, petioled, oblong or elliptic, entire; stipules caducous; flowers axillary, solitary or clustered; bracts at base of calyx absent.

Species 4 or 5, found on the sea-coasts of tropical Asia, Australia, and Africa; 1 species in South Africa, extending from Zululand to the Transkeian coast. (Type: *B. gymnorhiza* Lam.)

5529 **3. CASSIPOUREA** Aubl., Pl. Guian., vol. 1, p. 528 (1775)
(*Weihea* Spreng.; *Dactylopetalum* Benth.)

Calyx somewhat leathery, glabrous or hairy; tube subcampanulate; lobes 4—7, longer or shorter than the tube, lanceolate or ovate, often reflexed, valvate. *Petals* 4—7, as long as the calyx-lobes, spathulate-linear or broadly spathulate, laciniated, fimbriated, or deeply divided in 5 linear lobes at the apex. *Stamens* 8—40, all on or outside the disc or some inside and others outside a thick or membranous toothed disc, equalling the calyx-lobes or up to 3 times as long; filaments linear; anthers oblong. *Ovary* 2—4-chambered, rarely with the chambers confluent at the apex, free or slightly adnate with the base of the calyx, with 2 pendulous ovules in each chamber, glabrous or hairy; style terete, longer than the ovary, obscurely lobed at the apex. *Fruit* fleshy, with septical dehiscence. *Seeds* 2—4, compressed or angled, arillate; endosperm fleshy.

Trees or shrubs; leaves leathery or membranous, decussate or rarely whorled, simple, shortly petioled, elliptic or obovate, sometimes subacuminate, entire or serrate; stipules caducous; flowers solitary or several together, axillary, fascicled, sometimes glomerulate at the thickened nodes, with articulated pedicels; bracts present.

Species 62, natives of Africa, central America and India, mostly massed in Africa; 4 species in South Africa, extending from the north-eastern Transvaal, through Swaziland, Zululand, and Natal to the Komgha district. (Type: *C. guianensis* Aubl.)

137. COMBRETACEAE

Plants sometimes dioecious or with occasional bisexual flowers. *Flowers* sometimes all bisexual. *Calyx-tube* adnate to the ovary, often produced and constricted above the ovary; limb 4—5- (rarely 6—8-) fid; lobes valvate. *Petals* 4—5, sometimes wanting, imbricate or valvate. *Disc* annular or lobed. *Stamens* usually as many as or twice as many as the sepals, very rarely indefinite; filaments usually terete; anthers small, versatile, didymous, 2-theous. *Ovary* inferior, 1-chambered, with 2—6 pendulous ovules; style simple, often terete; stigma simple. *Fruit* leathery or drupaceous, angled, furrowed, compressed, or 4—5-winged, 1-seeded. *Seed* pendulous; embryo terete or furrowed; cotyledons sometimes convolute; endosperm 0.

Trees or shrubs, often scandent, unarmed or very rarely spiny; leaves opposite, alternate, or rarely whorled, simple; stipules 0; inflorescence a spike or raceme, rarely a panicle or head.

Genera 17; species over 450, found in most tropical countries.

- | | | | | | | |
|---|-----|-----|-----|-----|----------------------------|---|
| 1. Petals 0... | ... | ... | ... | ... | 4. <i>Terminalia</i> Linn. | |
| Petals present ... | ... | ... | ... | ... | ... | 2 |
| 2. Calyx produced into a campanulate or cup-shaped limb above the ovary | | | | | | 3 |
| Calyx produced into a long tube above the ovary | | | | | 3. <i>Quisqualis</i> Linn. | |
| 3. Flowers invariably all bisexual; fruit 4—5-winged or angled | | | | | | |
| 1. <i>Combretum</i> Linn. | | | | | | |
| Flowers bisexual and male; fruit usually 2-winged, rarely 3—4-winged | | | | | | |
| 2. <i>Pteleopsis</i> Engl. | | | | | | |

5538 1. COMBRETUM Linn., in Loebl. Iter. Hisp., p. 308 (1758)

Flowers usually bisexual, occasionally with unisexual flowers. *Calyx* glabrous, hairy, or glandular; tube campanulate, cylindric, or funnel-shaped, sometimes 4—6-angled, constricted above the ovary; lobes 4—5, shorter than the tube, usually ovate. *Petals* 4—5, free, inserted between the calyx-lobes and longer or shorter than them, usually spatulate or obovate-spatulate, more rarely suborbicular, rarely petals absent. *Disc* annular or basin-shaped, usually at the base of the widened portion of the calyx-tube, often hairy, sometimes represented by a ring of hairs only. *Stamens* 8—10, in 2 series; filaments terete, long exserted; anthers ovate, didymous. *Ovary* with 2—6 ovules; style terete, longer or shorter than the stamens; stigma simple. *Fruit* leathery or somewhat soft, 4—6-angled or 4—6-winged, rarely ovoid, 1-seeded.

Trees or shrubs, very often scandent, sometimes spiny; leaves opposite, more rarely in whorls of 3 or 4, very rarely alternate, simple, petioled, elliptic, ovate, oblong, or lanceolate, entire, glabrous or hairy; inflorescence a simple or paniced spike or raceme, sometimes much contracted; bracts large or small.

Species over 250, found in almost all tropical and subtropical countries, especially in tropical Africa; over 20 species recorded in South Africa, extending from the Transvaal to Natal, the north-western districts of the Cape Province, and South West Africa; 1 species extends to the Albany and Uitenhage districts. (Type: *C. fruticosum* (Loefl.) Fawcett & Rendle)

5539 2. PTELEOPSIS Engl., Pflanzenw. Ost. Afr., C., p. 293 (1893)

Flowers bisexual and male. *Male flowers*:—*Calyx-tube* broadly cup-shaped; teeth 4, shorter than the tube, broadly triangular. *Petals* 4, free, obcordate or broadly obovate. *Disc* at base of tube, annular, hairy. *Stamens* in 2 series, almost 3 times as long as the petals; the lower inserted at the base of the calyx-tube outside the disc; the upper inserted in the mouth of the calyx-tube; filaments terete; anthers didymous. *Style* present. *Bisexual flowers*: *Calyx-tube* cylindric below, campanulate above. *Stamens* and *disc* as in the male. *Style* terete; stigma simple. *Fruit* 2-winged, more rarely 3—4-winged.

Small trees; leaves alternate, sometimes a few opposite, petioled, simple, elliptic, entire; inflorescence an axillary raceme, with the male flowers below and the bisexual flowers above.

An African genus of 7 species; 1 species recorded from Zululand. (Type: *P. varifolia* Engl.=*P. myrtifolia* (Laws.) Engl. & Diels)

5541 3. QUISQUALIS Linn., Sp. Pl., ed. 2, p. 556 (1762)

Calyx-tube ovoid below, produced into a long tube above the ovary; lobes 5, small. *Petals* 5, longer than the calyx-lobes, oblong or suborbicular. *Stamens* 10, inserted within the throat of the calyx-tube. *Ovary* with 3—4 ovules; style partly adnate to the calyx-tube; stigma subdilated. *Fruit* dry, leathery, oblong, acutely 5-angled, 5-winged and 5-furrowed, 1-seeded. *Seed* 5-angled, 5-furrowed; cotyledons fleshy, plano-convex.

Scandent shrubs; leaves opposite or subopposite, simple, oblong or obovate, acuminate, entire; inflorescence usually a short axillary and terminal spike, sometimes a raceme; flowers showy.

Species 17, natives of Africa, India, and the Philippine Islands; 1 species occurs in Natal. (Type: *Q. indica* Linn.)

5544 4. TERMINALIA Linn., Mant., p. 21 (1767)

Plants dioecious, with occasional bisexual flowers. *Flowers* sometimes all bisexual. *Calyx-tube* ovoid or cylindric, constricted above the ovary; limb

urceolate or campanulate, 5-toothed or 5-fid, very often deciduous. *Petals* 0. *Disc* annular or of separate shallow cushions, villous. *Stamens* 10, in 2 rows, longer than the calyx; filaments terete; anthers small, didymous. *Ovary* with 2, rarely 3, ovules; style terete, often thickened and villous at the base; stigma simple. *Fruit* ovoid, angled, or compressed or 2—5-winged, 1-seeded. *Seed* often elongated-ovoid; cotyledons convolute.

Trees or shrubs; leaves alternate or rarely opposite or subopposite, very often crowded at the apices of the branches, often obovate or lanceolate, sometimes apiculate, usually petioled and entire, sometimes pellucid-dotted and glandular on either side at the base; inflorescence a long lax spike, very rarely a head.

Species about 200, found in almost all tropical countries; 9 species recorded from South Africa, found in South West Africa, Ngamiland, Bechuanaland Protectorate, the Transvaal, and Natal. (Type: *T. catappa* Linn.)

138. MYRTACEAE

Flowers usually bisexual, regular. *Calyx-tube* more or less adnate to the ovary; limb 3—5-parted or sometimes truncate and almost entire. *Petals* 4—5, rarely 6 or none, sometimes connate and all deciduous together, imbricate. *Disc* lining the calyx-tube or flat. *Stamens* usually numerous, rarely few, in 1 to many series, inflexed in bud, free or connate at the base; filaments often thread-like; anthers small, 2-theous, usually opening lengthwise by slits. *Ovary* inferior, more rarely $\frac{1}{2}$ -superior, 1- to many-chambered, usually with many ovules in each chamber, rarely ovules 1 or few; style simple; stigma sometimes capitate, entire, rarely 3—4-parted. *Fruit* a capsule or berry, wholly or partly enclosed in the persistent calyx-tube. *Seed* sometimes solitary; testa often woody, often glandular; embryo straight or curved; endosperm none or very scanty.

Trees or shrubs, rarely undershrubs or dwarf from a woody rootstock; leaves usually opposite, rarely alternate, simple, entire, gland-dotted, entire; stipules 0 or very small; inflorescence a cyme, head, umbel, or corymb, rarely flowers solitary; bracts and bracteoles often present.

- | | | |
|--|------------------------------|---|
| 1. Ovary semi-superior, 3—4-chambered | 3. <i>Metrosideros</i> Banks | |
| Ovary inferior, 2-chambered | ... | 2 |
| 2. Calyx-tube contrasting sharply with the pedicel | | |
| | 1. <i>Eugenia</i> Linn. | |
| Calyx-tube gradually narrowed into the pedicel | | |
| | 2. <i>Syzygium</i> Gaertn. | |

5578

1. EUGENIA Linn., Sp. Pl., ed. 1, p. 470 (1753)

Plants sometimes dioecious. *Calyx-tube* globose, contrasting distinctly with the pedicel, not or slightly prolonged above the ovary; limb divided down to the ovary; lobes 4, longer than the sepals, free. *Disc* lining the upper portion of the calyx-tube or flat. *Stamens* 4 times as many as the petals or numerous, longer than the calyx-lobes, free; filaments terete or filamentous; anthers versatile. *Ovary* in the centre of the receptacle, 2-chambered, with 2, few, or many ovules in each chamber; style terete; stigma capitate. *Fruit* a berry, subglobose, crowned by the persistent calyx, usually 1-locular, rarely 2-locular. *Seeds* 1—2, large; testa often rough, glandular; cotyledons bony.

Trees or shrubs, rarely undershrubs, sometimes dwarf from a woody rootstock; leaves opposite, simple, linear or elliptic, sometimes subacuminate, entire,

gland-dotted; inflorescence a cymose raceme or flowers solitary and axillary or terminal; bracts and bracteoles often small, often caducous.

Species about 900, found in all tropical and subtropical countries, especially America; 13 species found in South Africa extending from the Transvaal, Zululand, and Natal to the Alexandria district in the Cape Province, also recorded from South West Africa. (Type: *E. uniflora* Linn.)

5583 2. SYZYGIUM Gaertn., Fruct., vol. 1, p. 166, t. 33 (1788)

Calyx-tube obovate or club-shaped, gradually narrowed into the pedicel, more or less produced above the ovary; limb truncate, sinuate or shortly lobed. *Petals* 4—5, more or less connate and falling off entire. *Stamens* numerous, in many series, much longer than the petals; filaments thread-like; anthers versatile. *Ovary* in the upper part of the receptacle, 2-chambered, with few ovules in each chamber; style somewhat thick and flattened; stigma simple. *Fruit* a 1-locular berry, 1- or few-seeded. *Seeds* globose; cotyledons large, bony.

Trees or shrubs; leaves opposite, simple, elliptic or suborbicular, sometimes cordate at the base, sometimes acuminate, entire; inflorescence an axillary and terminal cyme or corymb.

Species about 150, found in most tropical countries; 5 species in South Africa, found in the Transvaal, Swaziland, Zululand, Natal, through the coastal area to the Komgha district.

NOTE.—M. R. Henderson, "The Genus *Eugenia* (Myrtaceae) in Malaya", *The Gardens Bulletin*, Singapore, vol. 12, p. 10 (1949), finds no justification for separating *Syzygium* from *Eugenia* and also points out that *Caryophyllus* Linn. antedates *Syzygium* Gaertn.—E. P. P.

5588 3. METROSIDEROS Banks ex Gaertner, Fruct., vol. 1, p. 170, t. 34 (1788)

Calyx-tube campanulate, funnel-shaped, or urceolate, more or less adnate at the base to the ovary; lobes 5, imbricate. *Petals* 5, spreading, longer than the calyx-lobes, obovate-spathulate. *Stamens* 20—30 or indefinite, in 1 to many series, much longer than the petals, free; filaments thread-like; anthers versatile. *Ovary* inferior or semi-superior, 3- (rarely 4-) chambered, with several to many ovules in each chamber; style terete, shorter than the stamens; stigma small, truncate or capitate. *Fruit* a capsule, included in or shortly exserted from the persistent calyx-tube, 2—3- (rarely, 4-) locular, with many seeds in each loculus. *Seeds* variously shaped, wingless; embryo straight.

Trees or shrubs, rarely scandent; leaves opposite or rarely almost alternate, simple, sometimes linear-lanceolate, entire; inflorescence a terminal, rarely axillary, dense di- or tri-chotomous cyme; flowers often showy.

Species about 61, natives of Australia, New Zealand, Polynesia, and the Malay Archipelago; 1 species recorded from Chile; 1 species in South Africa, extending from the south-western districts of the Cape Province to the Riversdale district. (Type: *M. scandens* Soland.)

139. MELASTOMATACEAE

Flowers regular, bisexual. *Calyx-tube* often adnate to the ovary; limb truncate or lobed. *Petals* free, as many as the calyx-lobes, inserted in the mouth of the calyx-tube, imbricate. *Stamens* as many as or more usually twice as many as the petals and inserted with them, equal or unequal; filaments various, sometimes flattened, sometimes with short or long lobes about the middle or near the anther; anthers 1- or 2-theous, basifixed, often linear, often horned or spurred, with the connective often thickened at the apex, opening by pores or lateral slits. *Ovary* inferior or $\frac{1}{2}$ -inferior, 2- to many-

chambered, rarely 1-chambered, with a free-central placenta, with few or many ovules in each chamber; style simple; stigma simple or lobed. *Fruit* usually enclosed in the calyx-tube, a capsule or berry. *Seeds* mostly minute; endosperm 0.

Herbs, shrubs, or trees, erect, rarely scandent or prostrate or creeping; leaves opposite, very rarely whorled, simple, often petioled, 3—9-nerved, rarely penninerved, entire, crenate, or serrulate; stipules 0; inflorescence a spike, panicle, or corymb, more rarely flowers solitary or fascicled.

Genera 164; species almost 3,000, found in almost all tropical countries, especially abundant in South America.

1. Ovary 1-chambered; filaments without appendages

3. *Memecylon* Linn.

- Ovary 4—5-chambered; filaments with appendages 2

2. Stamens equal... .. 1. *Antherotoma* Hook. f.
 Stamens unequal 2. *Dissotis* Benth.

5651 1. *ANTHEROTOMA* Hook. f., in Benth. et Hook., Gen. Plant., vol. 1, p. 745 (1867)

Calyx-tube membranous, campanulate, with stiff setae, some of which are on thick protuberances; lobes 4, shorter than the tube, ovate, obtuse, with a few long setae. *Petals* 4, inserted in the mouth of the calyx-tube, longer than the calyx-lobes, obovate, scarcely clawed, with a few setae at the tip. *Stamens* 8, equal, inserted in the mouth of the calyx-tube, about as long as the petals; filaments flattened, with a bilobed appendage on the upper portion and curved above the appendage; anthers 1-theous, opening by a terminal pore. *Ovary* inferior, 4-chambered, with many ovules in each chamber, with a crown of setae at the apex; style thick, terete, slightly longer than the stamens; stigma subcapitate. *Fruit* a capsule, enclosed in the calyx-tube. *Seed* with a sculptured testa.

Small herbs, often with unbranched stems; stems covered with setae; leaves opposite, subsessile, far apart, usually lanceolate, entire, covered with setae; flowers few, massed at the apices of the branches.

Species 2, found in Madagascar and Africa; 1 species recorded from the north-eastern Transvaal. (Type: *A. naudini* Hook. f.)

5659 2. *DISSOTIS* Benth., in Hooker Niger Fl., p. 346 (1849)

(Under *Osbeckia* Linn. in the Fl. Cap.)

Calyx-tube ovoid or campanulate, produced above the ovary, glabrous or covered with stellate bristles or scales; lobes 4—5, almost as long as the tube, oblong, ovate, or lanceolate, sometimes acuminate, often alternating with bristly teeth or thick processes, persistent or deciduous. *Petals* 4—5, longer than the calyx-lobes, obovate, sessile. *Stamens* 8—10, unequal; filaments flattened; 5 filaments with 2-lobes about half-way up or with a long 3-lobed or club-shaped reflexed appendage; 5 stamens with 2 lobes or a 2-lobed appendage near the anther; anthers linear, with wavy margins, opening by a terminal pore. *Ovary* adnate to the wall of the calyx-tube, 4—5-chambered, with many ovules in each chamber, glandular-hairy, hirsute, or with a crown of bristles at the apex; style straight or curved, usually longer than the stamens, terete; stigma simple or subcapitate. *Fruit* a capsule, included in the persistent calyx-tube, 4—5-locular. *Seeds* small, cochleate.

Herbs or shrubs, sometimes with a long rootstock, usually hairy; leaves opposite, simple, shortly petioled, usually oblong-lanceolate or lanceolate, entire,

3—5-nerved; inflorescence usually a short terminal panicle or flowers solitary; bracts sometimes present.

Species about 84, all African; 5 species found in South Africa, extending from the northern Transvaal, Swaziland, Zululand, and Natal to Pondoland. (Type: *D. grandiflora* Benth.)

5788 3. MEMECYLON Linn., Sp. Pl., ed. 1, p. 349 (1753)

Calyx somewhat fleshy; tube campanulate, hemispherical, or saucer-shaped, glabrous; limb dilated, cup-shaped, truncate, entire or lobed; lobes 4, broadly ovate, about as long as the tube. *Petals* somewhat fleshy, sessile, longer than the calyx-lobes, ovate or orbicular. *Stamens* 8, equal, longer than the petals; filaments terete; anthers hatchet-shaped, with the connective often dilated above, obtusely spurred or horned at the base, 2-theous, opening by longitudinal slits. *Ovary* inferior, 1-chambered, with 6—12 ovules on a free-central placenta; style terete, acuminate; stigma simple. *Fruit* a globose berry, 1-seeded. *Seed* large.

Glabrous trees or shrubs; leaves opposite, simple, sessile or shortly petioled, ovate, oblong, or suborbicular, entire, penninerved or 3-nerved; inflorescence an axillary cyme, more rarely a panicle or umbel, or flowers in axillary clusters.

Species about 343, natives of Asia, Africa, Australia, and the Pacific Islands; 3 species recorded from Natal to Pondoland. (Type: *M. capitellatum* Linn.)

140. ONAGRACEAE

Flowers usually bisexual, regular or rarely irregular. *Calyx-tube* sometimes produced above the ovary or not produced; lobes 2—4, rarely 5—6, valvate. *Petals* usually 2—4, fugacious, rarely 0. *Stamens* 1—8, rarely 5, 6, or 12, in 1—2 rows; filaments terete; anthers oblong or linear, rarely didymous or globose, 2-theous. *Ovary* inferior, usually 4-chambered, more rarely 2—6-chambered, rarely 1-chambered, with 1 to many ovules in 1 to many rows in each chamber; style terete, often thick, sometimes 0; stigma capitate, discoid, entire, or divided into 4—5 lobes. *Fruit* a capsule, nut or berry, variously shaped, often long-linear in outline. *Seeds* terete or prismatic-angled, smooth or papillose, sometimes with a terminal tuft of hairs; endosperm 0 or very thin.

Annual, biennial, or perennial herbs, rarely shrubs or trees, sometimes aquatic; leaves opposite or alternate, simple, entire, pinnatifid, toothed, or serrated; stipules mostly absent; inflorescence a terminal spike, raceme, or head or flowers solitary and axillary.

Genera 38; species about 500, mostly American.

- | | | | | | |
|---|-----|-----|-----|-----|---------------------------|
| 1. Calyx produced above the ovary; stamens unequal, seeds with a tuft of hairs | ... | ... | ... | ... | 3. <i>Epilobium</i> Linn. |
| Calyx not produced above the ovary; stamens equal; seeds without a tuft of hairs... | ... | ... | ... | ... | 2 |
| 2. Stamens twice as many as the petals | | | | | 1. <i>Jussiaea</i> Linn. |
| Stamens as many as the petals | ... | | | | 2. <i>Ludwigia</i> Linn. |

5791 1. JUSSIAEA Linn., Sp. Pl., ed. 1, p. 388 (1753) (*Jussiaea* Linn.)

Calyx-tube not produced beyond the ovary; lobes 4—6, ovate, lanceolate, sometimes acuminate, acute, persistent. *Petals* 4—6, spreading, about as long as or longer than the calyx-lobes, ovate, sessile. *Stamens* 8—12, in 2 rows, shorter than the petals; filaments terete, sometimes thickened below;

anthers ovate or oblong, 2-theous, opening by longitudinal slits. *Ovary* elongated, cylindric or prismatic, ribbed, 4—6-chambered and with many ovules in each chamber; style sometimes thick and shorter than the stamens or thick and longer than the stamens; stigma 4—6-lobed. *Fruit* a capsule, cylindric, oblong, or club-shaped, the body often narrowed into a pedicel-like base, 4—12-angled or -ribbed, opening by valves or by the breaking down of the capsule wall. *Seeds* many, small, brown, ellipsoid, furrowed on one side.

Perennial herbs or shrubby, sometimes found growing in water, erect or creeping; leaves membranous, more rarely leathery, simple, usually entire, more rarely serrated; flowers yellow or white, axillary, solitary, on long or short pedicels; bracteoles often present.

Species about 100, found in almost all tropical countries, especially abundant in Brazil; 4 species found in Ngamiland, the Transvaal, Natal to Pondoland. (Type: *J. repens* Linn.)

5793

2. LUDWIGIA Linn., Sp. Pl., ed. 1, p. 118 (1753)

Calyx-tube not produced beyond the ovary; lobes 3—5, ovate, lanceolate, acute, generally persistent. *Petals* 3—5, usually 4, shorter than the calyx-lobes; filaments not much longer than the anthers; anthers ovoid or oblong. *Ovary* cylindric, prismatic, or turbinate, 4—5-chambered, with many ovules in each chamber; style simple, thick, terete, sometimes almost absent; stigma capitate and 2—5-lobed or -furrowed, sometimes sessile and discoid. *Fruit* a capsule, terete or 4—5-ribbed, -angled, or -winged, opening by valves or a terminal pore. *Seeds* small, light brown, ellipsoid, keeled.

Annual or perennial herbs, sometimes found in swamps; leaves opposite or alternate, simple, often lanceolate or linear-lanceolate, entire; inflorescence sometimes a terminal head or flowers solitary, usually sessile, axillary or terminal; bracteoles present.

Species about 43, natives of North America, rare in tropical Africa; 2 species in South Africa, recorded from South West Africa, the Transvaal, Basutoland, Zululand, Natal to the Komgha district. (Type: *L. alternifolia* Linn.)

5795

3. EPILOBIUM Linn., Sp. Pl., ed. 1, p. 347 (1753)

Calyx-tube prolonged above the ovary; lobes 4, lanceolate. *Petals* 4, sessile, usually slightly longer than the calyx-lobes, obovate or obcordate, often notched, erect or spreading. *Stamens* 8, unequal, shorter than the petals, 4 long, 4 short; filaments terete; anthers linear or oblong. *Ovary* linear in outline, 4-angled or terete, 4-chambered, with many ovules in each chamber; style terete, about as long as the longer stamens or as long as the petals; stigma club-shaped or 2—5-lobed. *Fruit* a capsule, narrow, elongated, 4-sided, opening by 4 valves. *Seeds* brown, ellipsoid, with a terminal tuft of hairs.

Cauliscent herbs, sometimes shrubby, decumbent, creeping, or erect; leaves alternate or opposite, simple, linear, lanceolate, or linear-lanceolate, entire or toothed; inflorescence a spike or raceme or flowers solitary and axillary.

Species about 450, found in most parts of the world except the tropics; 9 species in South Africa, extending from the south-western districts of the Cape Province to Natal, Basutoland, and the Transvaal. (Type: *E. hirsutum* Linn.)

141. HYDROCARYACEAE

Calyx-tube oblong in outline, slightly produced above the ovary; lobes 4, lanceolate, persistent, accrescent, often spinescent, at first hirsute then glabrous. *Petals* 4, longer than the calyx-lobes, obovate, subsessile. *Stamens*

4, as long as the calyx-lobes; filaments linear; anthers oblong, 2-theous. *Ovary* semi-superior, 2-chambered, with a single long-linear pendulous ovule in each chamber; style thick, terete, as long as the stamens; stigma large, globose. *Fruit* bony or coriaceous, horned with 2—4 of the persistent calyx-lobes, 1-locular, 1-seeded. *Seed* large, completely filling the fruit, one very large and thick, the other merely a small scale; endosperm 0.

Floating herbs; leaves dimorphic; submerged leaves root-like, pinnatipartite with filiform segments; aerial leaves alternate, simple, long-petioled, triangular-ovate, with serrated margins; stipules long-linear, acuminate, deciduous; flowers solitary, axillary.

Genus 1; species 3, found in Africa, Asia, and Central Europe.

5829

TRAPA Linn., Sp. Pl., ed. 1, p. 120 (1753)

Characters of the family.

One species recorded from South West Africa. (Type: *T. natans* Linn.)

NOTE.—de Dalla Torre and Harns, whose system of classification is followed, place *Trapa* in a separate family; the English botanists place the genus in the family *Onagraceae*.—E. P. P.

142. HALORRHAGIDACEAE

Plants sometimes monoecious. *Flowers* often minute, incomplete. *Calyx-lobes* 2—4 or 0. *Petals* 2—4 or 0, free, concave, deciduous, usually valvate. *Stamens* 2—8, rarely 1; filaments rarely elongated; anthers 2-theous, basifixed, often oblong or linear-oblong, often longer than the filaments. *Ovary* inferior, compressed or 2—8-angled or -ribbed, rarely 2—4-winged, 1—4-chambered, with 1 to few pendulous ovules in each chamber; styles 1—4, usually free, plumose or papillose. *Fruit* usually minute, nut-like or drupaceous, compressed, angled, ribbed, or winged, indehiscent, 1—3-locular, or of 2—4 cocci, with a single seed in each loculus or coccus. *Seeds* pendulous; embryo cylindric; endosperm fleshy, often copious.

Perennial herbs or undershrubs, rarely annuals, often aquatic or found growing in water or wet places; leaves alternate, opposite, or whorled, simple or pectinato-pinnatifid; stipules rarely present and adhering to the petiole; inflorescence sometimes a raceme, spike, panicle, or corymb, or flowers often axillary, solitary, or clustered.

Genera 8, species about 100, found almost throughout the world.

1. Aquatic plants, with pectinato-pinnate leaves in whorls of 3 or 4;
leaf-segments filiform 2. *Myriophyllum* Linn.
- Terrestrial plants, but often found growing in water or damp places;
leaves alternate or opposite, not pinnately divided 2
2. Leaves small, sessile; flowers in axillary fascicles
1. *Laurembergia* Berg.
- Leaves large, on long petioles; inflorescence a long terminal spike
3. *Gunnera* Linn.

5833

1. LAUREMBERGIA Berg., Descr. Pl. Cap., p. 350 (1767)

(*Serpicula* Linn.)

Plants monoecious. *Male flowers*.—*Calyx-tube* very short; lobes 4, much longer than the tube, ovate, acute. *Petals* 4, much longer than the calyx, linear-oblong, concave. *Stamens* 4—8, as long as the petals; anthers linear, subsessile. *Ovary* 0; stigmas 4; rudimentary. *Female flowers*.—*Calyx-tube* short, ovoid, prominently 8-ribbed; lobes 4, about as long as the tube, ovate,

acute, deciduous. *Petals* as in the male, soon deciduous. *Stamens* 0. *Ovary* 1-chambered, with 1 or 4 pendulous ovules; styles 4, very short, feathery or hairy. *Fruit* a fleshy nut, 8-ribbed, with a single seed. *Seed* cylindric; embryo cylindric, straight; cotyledons very small; endosperm fleshy.

Small creeping herbs, sometimes found in marshy places; leaves opposite or alternate, linear or lanceolate, entire or toothed; flowers very small, in axillary fascicles; male flowers long-pedicelled; female flowers sessile or shortly pedicelled.

Species about 22, natives of India, Africa, Madagascar, Mauritius, New Zealand, Java, and Brazil; 1 species occurs in South Africa; 1 species from the north-eastern Transvaal extends through Natal and the coastal area to the south-western districts of the Cape Province. (Type: *L. repens* Berg.)

5834 2. MYRIOPHYLLUM Linn., Sp. Pl., ed. 1, p. 992 (1753)

Plants monoecious, rarely flowers bisexual. *Male flowers*:—*Calyx-tube* very short, 4-lobed; lobes 4, rarely 2, sometimes absent. *Petals* 2—4, much longer than the calyx, sessile, elliptic, concave, soon deciduous. *Ovary* 0; styles 4, rudimentary. *Stamens* 2—8, much exerted in mature flowers; filaments thread-like; anthers linear or linear-oblong. *Female flowers*:—*Calyx-tube* 4-furrowed or 4-lobed; lobes 0 or 4 and minute. *Petals* minute or 0. *Stamens* 0 or rudimentary. *Ovary* 4- (rarely 2-) chambered, with a solitary pendulous ovule in each chamber; styles 4, short, thick and fleshy, very often recurved and plumose or glandular-hairy. *Fruit* a nut or drupe or of 4 indehiscent carpels. *Seed* pendulous; endosperm copious.

Aquatic herbs; leaves alternate, opposite, or whorled, linear, ovate, entire or toothed or leaves pectinate-pinnate with almost filiform segments; flowers axillary, sessile or shortly stalked or inflorescence a terminal spike with male flowers above and female flowers below; flowers whorled on spike, solitary, rarely 2, in the axil of a pectinate bract; bracteoles 2, deeply concave.

Species about 55, found all over the world; 1 species in South Africa extending from the Transvaal, Natal, to the south-western districts of the Cape Province; also recorded from the Fauresmith and Kimberley districts. (Type: *M. spicatum* Linn.)

5836 3. GUNNERA Linn., Mant., vol. 1, p. 16 (1767)

Plants sometimes monoecious or flowers bisexual. *Calyx-tube* ovoid or compressed; lobes 2—3, often imperfect or 0 in the male flowers. *Petals* 2, small, concave, or absent. *Stamens* 1—2; anthers oblong, basifixed, much longer than the filaments. *Ovary* 1-chambered, with a solitary pendulous ovule; styles 2, papillose. *Fruit* a leathery or fleshy drupe, compressed, 3-angled or almost globose. *Embryo* pear-shaped or obcordate; endosperm copious.

Nearly stemless herbs growing in water or wet places; leaves radical, alternate, simple, long-petioled, ovate or suborbicular, cordate at the base, entire, lobed, or crenate; stipules adhering to the petiole; inflorescence a head or compound spike, sometimes with the male flowers above and the female flowers below; flowers minute.

Species about 27, natives of Africa, Java, Tasmania, New Zealand, and South America; 1 species found in South Africa, extending from the Transvaal, Swaziland, Basutoland, and Natal through the coastal area to the south-western districts of the Cape Province; also recorded from the Queenstown district. (Type: *G. perpensa* Linn.)

143. ARALIACEAE

Plants rarely dioecious. *Flowers* regular, usually bisexual. *Calyx-limb* annular or broadly and shortly cupular. *Petals* 3 to many; often 5, valvate

or slightly imbricate, deciduous. *Stamens* as many as the petals, rarely more; filaments linear or thickened; anthers ovate or oblong, 2-theous. *Disc* epigynous, various. *Ovary* inferior, 1- to many-chambered, with a solitary pendulous ovule in each chamber; styles as many as the ovary-chambers, distinct or connate at the base. *Fruit* a berry or drupe, rarely flattened and membranous, 1 to many loculi. *Seed* sometimes solitary by abortion; embryo straight, sometimes minute; endosperm copious.

Trees or shrubs, rarely herbs, sometimes scandent; leaves alternate, very rarely opposite, often petioled, simple, entire, palmatifid or pinnatifid, or digitately compound; stipules adnate to the petiole; inflorescence a head, umbel, spike, or raceme, with the racemes paniced or umbellate, rarely flowers solitary; bracts and bracteoles usually present.

Genera 54; species about 650, natives of India, the Pacific Islands, Japan, America, Asia, Australia, Madagascar, and Africa.

- | | | | |
|---|-----|-----|---------------------------------|
| 1. Fruit somewhat fleshy | ... | ... | 1. <i>Cussonia</i> Thunb. |
| Fruit flattened, membranous, with distinct longitudinal veins | | | 2. <i>Seemannaralia</i> Viguier |

- 5872 1. *CUSSONIA* Thunb., Nova Acta Soc. Upsula, vol. 3, p. 210, t. 12—13 (1780)

Calyx-tube oblong in outline or almost absent; limb often saucer-shaped, with an undulated 5-toothed margin or subentire. *Petals* 5, often somewhat fleshy, ovate, valvate, deciduous. *Stamens* 5; filaments often more or less fleshy, lanceolate or linear; anthers ovate, longer or shorter than the filaments. *Disc* flat, depressed, or conical in the middle. *Ovary* 2-chambered; styles 2, short or elongated, often thick, scarcely connate, usually stigmatose on the inner face. *Fruit* fleshy, laterally compressed or subglobose. *Seeds* globose, ovoid, or oblong in outline and plano-convex in cross-section; testa somewhat horny; embryo very small in relation to size of the seed, straight; cotyledons lanceolate; endosperm fleshy, copious, ruminant.

Shrubs or trees, sometimes armed; leaves often crowded at the apices of the branches, alternate, on long petioles, palmatifid or digitate, rarely twice digitate; leaflets entire, deeply toothed or pinnatifid; stipules adnate to the petiole; inflorescence a dense spike, raceme, or umbel, with the spikes or umbels often paniced.

Species about 42, natives of Africa, Madagascar, and the Mascarene Islands; 8 species occur in South Africa, extending from the Transvaal and Natal to the Cape.

- 5872a 2. *SEEMANNARALIA* Viguier, Ann. Sci. Nat., ser. 9, vol. 4, p. 116 (1906)

Calyx-tube saucer-shaped, indistinctly 5-toothed. *Petals* 5, ovate, slightly imbricate, deciduous. *Stamens* 5; filaments linear; anthers about as long as the filaments, ovate, sagittate. *Ovary* 2-chambered; styles thick, somewhat cohering. *Fruit* flattened, elliptic, with distinct longitudinal veins. *Seed* solitary by abortion, discoid; embryo minute; endosperm fleshy.

A large shrub or tree; leaves petioled, simple, digitately lobed and veined, toothed; stipules adnate to the petiole; inflorescence axillary and terminal, usually a panicle of umbels.

Species 1, endemic, recorded from the northern Transvaal, Zululand, Natal, Pondoland, and the Transkei. (Type: *S. gerrardii* (Seem.) Viguier)

144. UMBELLIFERAE

Flowers usually regular and bisexual, rarely unisexual. *Calyx-tube* adnate to the ovary, truncate and entire or with evident or rudimentary lobes. *Petals* 5, free, inserted on the margin of the disc, normally with long or short inflexed apices, usually keeled on the inner face, soon falling. *Disc* flattened and expanded, depressed, or conical, with entire crenate or undulate margins. *Stamens* 5, alternating with the petals; filaments terete or linear, inflexed in the bud; anthers 2-theous, opening laterally, sometimes didymous. *Ovary* inferior, 2-chambered, very rarely 1- or 3-chambered, with a single pendulous ovule in each chamber; styles 2, short or long, free. *Fruit* usually crowned with the persistent calyx-teeth, the disc, and styles, consisting of 2 easily separable mericarps, often ribbed, winged, villous or spiny. *Mericarps* indehiscent, usually marked with 5 longitudinal primary and often secondary intermediate ribs, flat or convex on the face, often with a median rib or furrow on the face; oil-tubes usually between the ribs, conspicuous or small, rarely absent. *Carpophore* 2-partite, deeply divided or 2-toothed, rarely absent. *Seed* various; embryo minute; endosperm copious.

Usually herbs, more rarely shrubs or trees; often acaulescent, often with thick tuberous roots; leaves alternate, rarely opposite, often radical, usually with sheathing petioles, variously divided, rarely simple; inflorescence a simple or compound umbel; rarely a head; flowers normally small; involucre and involucre various, rarely absent.

Genera 257; species over 2,250, found in the temperate regions, especially numerous in Europe and Asia; numerous in America, Africa, and Australia.

- | | | |
|---|--------------------------------|----|
| 1. Lower leaves different from the upper | 19. <i>Pimpinella</i> Linn. | 2 |
| Leaves all alike, or the cauline leaves or all the leaves reduced to bracts ... | | |
| 2. Plants with radical leaves which are tomentose or woolly on both surfaces or on the under surface only; peduncle long and nude | 3. <i>Hermas</i> Linn. | |
| Leaves not tomentose or woolly, but if tomentose then the peduncles not long ... | | 3 |
| 3. Involucral-bracts conspicuous and petaloid | 5. <i>Alepidea</i> De la Roche | |
| Involucral-bracts small or absent; if large then not petaloid ... | | 4 |
| 4. Plants with radical leaves lying flat on the ground and spiny on the upper surface ... | 6. <i>Arctopus</i> Linn. | |
| Plants with radical or cauline leaves or both, but radical leaves not lying flat on the ground and spiny ... | | 5 |
| 5. Petioles persistent with the blades wanting or nearly so in the adult plant ... | 15. <i>Pituranthos</i> Viv. | |
| Petioles when present not persistent ... | | 6 |
| 6. Leaves simple ... | | 7 |
| Leaves compound or much divided, sometimes reduced to scales ... | | 10 |
| 7. Leaves with long petioles and a distinct blade, rarely not differentiated into petiole and blade, but then umbels simple ... | | 8 |
| Leaves grass-like, not differentiated into a petiole and blade; umbels compound ... | | 9 |
| 8. Leaves rounded at the base, sometimes peltate; stipules present; mericarps 5-nerved ... | 1. <i>Hydrocotyle</i> Linn. | |
| Leaves usually cuneate at the base; stipules absent; mericarps more than 5-nerved ... | 2. <i>Centella</i> Linn. | |

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|---|--------------------------|-----|-------------------------------------|----|
| 10. Fruits hairy, bristly, prickly, glandular, or tuberculed | ... | ... | ... | 11 |
| Fruits not as above but often ribbed | ... | ... | ... | 16 |
| 11. Spines on fruit hook-pointed; leaves digitately divided | | | | |
| | 4. <i>Sanicula</i> Linn. | | | |
| Spines on fruit, when present, not hook-pointed, if slightly so then leaves pinnately divided | ... | ... | ... | 12 |
| 12. Fruit villous | ... | ... | ... | 13 |
| Fruit bristly, prickly, tuberculed, or glandular | ... | ... | ... | 15 |
| 13. Cauline leaves reduced to bracts | ... | | 15. <i>Pituranthos</i> Viv. | |
| Cauline leaves pinnate | ... | ... | ... | 14 |
| 14. An erect herb; hairs on fruit, when present, not club-shaped | | | 17. <i>Sonderina</i> Wolff | |
| Acaulescent plant, hairs on fruit club-shaped | | | 28. <i>Choritaenia</i> Benth. | |
| 15. Cauline leaves pinnately decompound | | | 25. <i>Capnophyllum</i> Gaertn. | |
| Cauline leaves reduced to bracts | ... | | 15. <i>Pituranthos</i> Viv. | |
| 16. Carpophore absent, undivided or shortly bifid | ... | ... | ... | 17 |
| Carpophore 2-partite... | ... | ... | ... | 20 |
| 17. A dwarf subwoody plant; leaves thick, divided in the uppermost third, gummy | ... | ... | 13. <i>Marlothiella</i> Wolff | |
| Herbaceous plants; leaves not thick and gummy | ... | ... | ... | 18 |
| 18. Leaves simply pinnate; pinnae many, sharply serrated; involucre of many long persistent bracts | ... | ... | 20. <i>Berula</i> Koch | |
| Leaves decompound, if simply pinnate then pinnae 3—4 or filiform but not regularly serrated; involucre of small bracts or wanting | ... | ... | ... | 19 |
| 19. Seed with a deep furrow on the inner face | | | 7. <i>Conium</i> Linn. | |
| Seed not furrowed on the inner face | | | 14. <i>Apium</i> Linn. | |
| 20. Mericarps unequal | ... | ... | 10. <i>Heteromorpha</i> Ch. & Sch. | |
| Mericarps equal | ... | ... | ... | 21 |
| 21. Flowers unisexual | ... | ... | 24. <i>Annesorrhiza</i> Ch. & Sch. | |
| Flowers bisexual, rarely bisexual and male | ... | ... | ... | 22 |
| 22. Leaves appearing after the flowers | ... | | 18. <i>Chamarea</i> E. & Z. | |
| Leaves and flowers appearing together | ... | ... | ... | 23 |
| 23. Leaves digitately 3-foliolate | ... | | 21. <i>Polemannia</i> E. & Z. | |
| Leaves variously divided but not 3-foliolate, rarely simple | ... | ... | ... | 24 |
| 24. A small tree up to 20 ft. high | ... | | 27. <i>Steganotaenia</i> Hochst. | |
| Herbs or undershrubs | ... | ... | ... | 25 |
| 25. Oil-tubes absent from the face of the mericarps | | | 8. <i>Lichtensteinia</i> Ch. & Sch. | |
| Oil-tubes present on the face of the mericarps | ... | ... | ... | 26 |
| 26. Mericarps with the dorsal veins produced into broad or narrow wings | ... | | | 27 |
| Mericarps, if winged, then winged on the margins only | ... | ... | ... | 28 |
| 27. Lateral veins produced into a broad flap which bends over the face of the mericarp | ... | ... | 9. <i>Ruthea</i> Bolle | |
| Mericarps with 5 prominent wings; the lateral wings not bending over the face | ... | ... | 23. <i>Cnidium</i> Cusson | |

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31. Oil-tubes large and prominent	26. <i>Peucedanum</i> Linn.	
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5893 1. HYDROCOTYLE Linn., Sp. Pl., ed. 1, p. 234 (1753)

Flowers bisexual. *Calyx* an annular ring, teeth not distinct. *Petals* ovate, acute, entire, often with incurved tips, valvate. *Disc* flat or nearly so. *Filaments* linear; anthers elliptic almost as long as or longer than the filaments, subdidymous. *Fruit* lenticular, laterally compressed, orbicular or depressed, smooth or rugose. *Mericarps* with 5 primary distinct ribs, without large oil-tubes, flat on the inner face. *Seed* lenticular.

Perennial herbs of damp places, with creeping stems, often rooting at the nodes; leaves alternate, simple, long-petioled, with entire toothed or lobed palmately nerved blades; blades sometimes orbicular and peltate, deeply cordate or divided to the base into 3, 5, or more segments; stipules present in the cauline leaves; inflorescence a simple or branched peduncled umbel, more rarely a small cyme; bracts of involucre obsolete or wanting.

Species about 220, found in almost all temperate and tropical countries; 2 species recorded from South Africa, widely distributed in the coastal belt from Zululand to the south-western districts of the Cape Province; also recorded from Bechuanaland and the Transvaal. (Type: *H. vulgaris* Linn.)

5894 2. CENTELLA Linn., Pl. Rar. Afr., p. 28 (1760)

Floral characters very similar to those of *Hydrocotyle*, but from which genus it differs in having 9—11 primary ribs on each mericarp and the ribs usually connected by a network of veins.

Perennial herbs, often creeping, sometimes rooting at the nodes, sometimes with a thick tap-root; leaves alternate, simple, usually petioled, rounded or cuneate at the base, sometimes linear or elliptic and toothed at the apex, sometimes ovate-lanceolate and entire, sometimes needle-like, sometimes rounded and cordate at the base; stipules absent; inflorescence a peduncled head-like umbel, occasionally flowers solitary; involucre-bracts 2—4, usually lanceolate.

Species about 20, natives of Africa, Australia, New Zealand, and America, some species found in most warm countries; about 11 species recorded from South Africa, extending from the northern Transvaal, through Zululand, Natal, and the coastal area to the south-western districts of the Cape Province. (Type: *C. villosa* Linn.)

5917 3. HERMAS Linn., Mant., vol. 2, p. 163 (1771)

Flowers bisexual or unisexual. *Calyx-lobes* ovate or lanceolate, evident, persistent. *Petals* somewhat filiform, inflexed at the apex. *Filaments* filiform, longer than the calyx-lobes; anthers oblong. *Disc* flattened. *Styles* terete, longer than the calyx-lobes. *Fruit* ovate, dorsally compressed or oblong in outline, tipped with the persistent calyx-lobes. *Mericarps* orbicular or oblong, flat or convex on the back and face, usually deeply channelled on each margin, with 5—6 veins and many oil-tubes in the furrows; the dorsal vein often forming a narrow keel. *Seed* flattened, usually broadly elliptic.

Large herbaceous or subshrubby plants of a tufted habit; stem often with the remains of old leaf bases; leaves radical or at the base of the stems, petioled or sessile, often large, elliptic or ovate, rarely cordate at the base, entire, toothed, crenate, or ciliate, tomentose or woolly on both surfaces or on the under surface only; inflorescence on a long peduncle, a compound crowded umbel; in each umbel a single female or bisexual flower surrounded by a number of male flowers, rarely all the flowers bisexual; involucre and involucels of several bracts.

Endemic; species 6, extending from the Caledon to the Uitenhage district. (Type: *H. depauperata* Linn.)

NOTE.—A specimen (*Andreea* 856) in the National Herbarium has bisexual flowers with a 3-chambered ovary and 3 styles.—E. P. P.

5918. 4. SANICULA Linn., Sp. Pl., ed. 1, p. 235 (1753)

Flowers unisexual or bisexual or unisexual and bisexual flowers in the same umbel. *Sepals* evident, lanceolate, acuminate, often free in the bisexual flowers and more or less connate in the unisexual flowers. *Petals* more or less emarginate above, more or less strongly inflexed. *Disc* flat or saucer-shaped. *Filaments* terete, strongly inflexed, longer than the petals; anthers oblong. *Ovary* covered with hooked spines; styles terete, rarely somewhat thickened, longer or shorter than the sepals. *Carpophore* 0. *Mericarps* broad or narrow on the inner face, smooth, rarely setose or granulate, with 5 large oil-tubes beneath the veins or with 2 large oil-tubes on the inner face of the mericarp. *Seed* flat or swollen and half-moon-shaped, often deeply concave or grooved on the face.

Perennial herbs; leaves radical and cauline, often on very long petioles, ternate, palmately-partite or variously pinnate; inflorescence a simple or compound umbel, rarely the umbels arranged in a raceme; bracts conspicuous or small.

Species about 52, found in almost all parts of the world except the Arctic regions, absent from Australia; 2 species extend from the northern Transvaal, through Natal and the coastal belt to the Cape Peninsula; also recorded from the Queenstown district. (Type: *S. europaea* Linn.)

5922 5. ALEPIDEA De la Roche, Eryng. Hist., p. 19, t. 1 (1808)

Flowers bisexual. *Calyx-teeth* large or small in relation to size of the ovary, membranous, subacute, sometimes absent. *Petals* erect, more or less obovate or elliptic, with long inflexed apices, keeled on the face. *Disc* usually tumid. *Stamens* shorter or longer than the petals; filaments filiform or terete; anthers oblong. *Styles* usually shorter than the petals. *Fruit* ovoid or obovoid-globose, scarcely laterally compressed. *Carpophore* reduced, undivided. *Mericarps* convex on the back, usually prominently 3-keeled, with the keels obtuse, flat on the face, with 5, usually large, oil-tubes, sometimes pustulate. *Seed* often plano-convex and ribbed on the convex side, sometimes without ribs.

Perennial herbs, usually with a distinct rootstock and cylindric fleshy roots; leaves sometimes large, radical and cauline or all cauline, usually the cauline and radical leaves differing in shape, elliptic, oblong, obovate-linear, long-spathulate, or strap-shaped, the radical leaves distinctly petioled or long attenuate to the base, entire or serrate, usually long ciliate or setose; inflorescence a few-flowered head; heads usually paniced; involucral-bracts usually coloured, conspicuous, often in 2 rows.

An African genus of 26 species; 23 species found in South Africa, extending from the Transvaal, Basutoland, Zululand, Natal, the eastern Orange Free State to the Riversdale district. (Type: *A. ciliaris* (L.f.) De la Roche = *A. capensis* (Berg.) Dyer)

5926 6. ARCTOPUS Linn., Sp. Pl., ed. 1, p. 1058 (1753)

Plants dioecious. *Male flowers*.—*Sepals* 5, linear-oblong. *Petals* oblong or oblanceolate, with long inflexed tips. *Disc* flattened. *Stamens* longer than the petals; filaments linear; anthers oblong. *Styles* 0. *Female flowers*.—*Sepals* usually 5, spinose-acute, at length rigid. *Petals* scarcely different from the sepals. *Styles* linear, longer than the sepals. *Fruit* more or less oblong in outline, usually beaked. *Carpophore* undivided. *Mericarps* flat on the inner face, with the primary veins more or less evident and spiny, without oil-tubes. *Seed* more or less elliptic in outline, flat on one face, slightly convex on the other face.

Acaulescent depressed perennial herbs, with a thick woody rootstock; leaves lying flat on the ground, petioled, ovate, lobed, with setose margins, mostly spiny above; male inflorescence a compound stalked umbel, with an involucre of 5—7 bracts which are spinous tipped; female inflorescence a sessile umbel, surrounded by 4, rarely 5, connate bracts which are ovate or semi-orbicular and spinous tipped.

Endemic; species 3, extending from the south-western districts of the Cape Province to the Albany district. (Type: *A. echinatus* Linn.)

NOTE.—In a male flower dissected there were 10 stamens.—E. P. P.

5970 7. CONIUM Linn., Sp. Pl., ed. 1, p. 243 (1753)

Flowers bisexual, with occasional unisexual flowers. *Calyx-teeth* obsolete. *Petals* obovate or cuneate, with the apex shortly inflexed, keeled on the inner face. *Disc* cushion-shaped, divided. *Stamens* longer than the petals; filaments linear; anthers oblong. *Fruit* broadly ovate or elliptic in outline, slightly laterally compressed. *Mericarps* with the 5 primary veins prominent, channelled on the inner face; oil-tubes very small, many. *Carpophore* undivided. *Seed* subterete or flat on one face and slightly convex on the other, channelled on the inner face.

Erect biennial herbs with long-tap roots; leaves pinnately decompound, with the segments pinnatifid or toothed; inflorescence a compound umbel of many rays; involucre and involucels of many small bracts.

Species 2, natives of Europe, Asia, and Africa; both species found in South Africa, extending from the Transvaal, Basutoland, Natal, the eastern Orange Free State to the south-western districts of the Cape Province. (Type: *C. maculatum* Linn.)

5990 8. LICHTENSTEINIA Cham. & Schlecht., Linnaea, vol. 1, p. 394, t. 5 (1826)

Flowers bisexual. *Calyx-lobes* 5, small, thick, ovate, acute. *Petals* elliptic, quadrate, or spathulate, with long inflexed apices, keeled on the inner face. *Disc* conical, often connate high up. *Stamens* about as long as the petals; filaments somewhat fleshy; anthers subdidymous. *Ovary* smooth or strongly ribbed; styles from almost obsolete to very evident. *Fruit* ovoid, or oblong in outline, nearly terete, crowned with the persistent calyx. *Mericarps* semi-terete or compressed and flat on one face and convex on the other face, channelled on the face, with 5 prominent primary veins and a large oil-tube under each; oil-ducts absent from the furrows and face of the mericarp. *Seed* somewhat flattened, obovate or elliptic in outline, often grooved on the back.

Perennial aromatic herbs, with a large rootstock and thick roots; leaves radical, petioled, entire, pinnatifid or pinnatisect, toothed; inflorescence a compound umbel; involucre and involucel of many small bracts.

A South African genus of 7 species, extending from the south-western districts of the Cape Province to Natal and the Transvaal; 1 species recorded from St. Helena. (Type: *L. lacera* Cham. & Schlecht.)

5991 9. *RUTHEA* Bolle in Verh. Bot. Ver. Prov. Brandenbg., vol. 3, p. 171 (1862)

Flowers bisexual. *Calyx-teeth* 5, triangular, acute, persistent, not enlarged after flowering. *Petals* obovate or ovate-elliptic, inflexed at the apex, keeled on the inner face. *Disc* conical. *Stamens* about as long as the petals; filaments terete; anthers oblong. *Styles* very short. *Fruit* more or less elliptic in outline, crowned with the persistent calyx-teeth and disc. *Mericarps* with 3 nearly wing-like dorsal veins and 2 lateral veins produced into a long flap which bends over the face of the mericarp; oil-tubes solitary in the furrows and 2 on the inner face. *Carpophore* bipartite. *Seed* semi-terete, flattened on face.

Perennial erect glabrous herbs; leaves pinnate, sometimes tripinnate or pinnatisect; inflorescence a compound umbel; involucre and involucler many-leaved.

Species 3, natives of the Canary Islands, St. Helena, and South Africa; 1 species found in the south-western districts of the Cape Province. (Type: *R. herbanica* Bolle)

NOTE.—H. Wolff, in *Das Pflanzenreich*, vol. 4, No. 228, p. 32, considers the species *Glia gummifera* (L.) Sond., described in the *Flora Capensis* and referred by some authors to the genus *Ruthea*, more properly belongs to the genus *Annesorhiza*.—E. P. P.

5992 10. *HETEROMORPHA* Cham. & Schlecht., in Linnaea, vol. 1, p. 385, t. 5 (1826)

Flowers bisexual. *Calyx-teeth* 5, triangular, acute. *Petals* more or less elliptic, long inflexed at the apex, keeled on the inner face. *Disc* conical. *Stamens* slightly longer than the petals, inflexed; filaments terete; anthers divided above. *Styles* very short. *Fruit* elliptic in outline, or somewhat pear-shaped, 3-winged. *Mericarps* of 2 forms, mostly flattened, with prominent ribs; oil-tubes 6, with 2 on the inner face. *Carpophore* 2-partite. *Seed* subterete.

Shrubs or undershrubs, sometimes small trees, with the bark on the older portion of the stem somewhat waxy; leaves petioled, simple, 2—3-sect or -pinnate, sometimes crenate on the margins; inflorescence a compound umbel of many rays; involucre and involuclers of many short bracts.

An African genus of 6 species; 3 species occur in South Africa, distributed from the Transvaal, Zululand, Natal, Basutoland, the eastern Orange Free State to the Swellendam district; also found in South West Africa. (Type: *H. arborescens* (Thunb.) Cham. & Schlecht.)

NOTE.—The common species in South Africa, *H. arborescens*, is extremely polymorphic in leaf-form, and the other 2 described species may simply be forms of *H. arborescens*.—E. P. P.

5994 11. *BUPLEURUM* Linn., Sp. Pl., ed. 1, p. 236 (1753)

Flowers bisexual. *Calyx-teeth* obsolete or very rarely conspicuous. *Petals* suborbicular, subovate, obovate, or oblong, more or less deeply concave, inflexed at the apex, keeled on the inner face. *Disc* flat, depressed, rarely subconical, sometimes slightly raised above the ovary on a short thick foot. *Stamens* longer than the petals; anthers oblong. *Styles* very short. *Fruit* more or less laterally compressed, sometimes subdidymous, oblong in outline, crowned with the persistent disc. *Mericarps* with 5 acute wings or prominent veins or with the veins sometimes obsolete; oil-tubes present or absent in the furrows. *Carpophore* 2-fid or 2-partite. *Seed* subterete.

Annual or perennial herbs, sometimes undershrubs; leaves more or less crowded at the base of the stem, scattered above, entire and grass-like, attenuate or cordate at the base; inflorescence a compound umbel of many rays; involucre or involuclers of variously shaped bracts or 0.

Species about 100, natives of Europe, Asia, America, and Africa; probably only 1 species in South Africa, extending from the Transvaal, Basutoland, and Natal to the south-western districts of the Cape Province. (Type: *B. rotundifolium* Linn.)

5996 12. RHYTICARPUS Sond., in Harv. & Sond. Fl. Cap., vol. 2, p. 540 (1862)

Flowers bisexual. *Calyx-teeth* small and triangular or long and linear, acute. *Petals* broadly ovate, inflexed at the apex, keeled on the inner face. *Disc* conical. *Styles* short or sometimes filiform and much longer than the petals. *Stamens* about as long as the petals; filaments terete; anthers oblong. *Fruit* somewhat elliptic in outline, crowned with the persistent disc and styles, prominently ribbed, rugose. *Mericarps* flat on the face, convex on the back, with 3 prominent veins on the back and the lateral veins somewhat winged, with a single oil-tube in each furrow and 2 oil-tubes on the face. *Carpophore* bipartite. *Seed* semi-terete in cross-section.

Perennial herbs or undershrubs; leaves biternate or tripinnatisect, sometimes reduced to the petioles which are sometimes very long and simple or divided; inflorescence a compound umbel; involucre and involucels of several small bracts.

Endemic; species 3, extending from the Van Rhynsdorp district, through the south-western districts of the Cape Province to the Uitenhage district; also recorded from the Calvinia and Queenstown districts. (Type: *R. rugosus* (Thunb.) Sond.)

5996a 13. MARLOTHIELLA Wolff, Engl. Bot. Jahrb., vol. 48, p. 263 (1913)

Flowers bisexual. *Calyx-teeth* somewhat fleshy, concave, acute. *Petals* ovate, not much longer than the sepals, inflexed at the apex, with the inflexed portion not free but continuous with the keel on the inner face, with an oil-gland. *Disc* conical. *Stamens* slightly longer than the petals; filaments linear; anthers oblong. *Styles* thick, conical. *Fruit* (immature) with 5 thick rounded nerves, glandular-pubescent. *Mericarps* flat on to inner face, convex on the back, with 5 large oil-tubes, 2 of which are on the inner face. *Carpophore* divided.

A dwarf shrub with thick semi-succulent stems and branches somewhat gummy; leaves thick, petioled, pinnately divided above; petioles thick and somewhat fleshy; inflorescence a compound umbel; involucre and involucels small, few.

Endemic; species 1, recorded from South West Africa. (Type: *M. gummifera* Wolff)

6004 14. APIUM Linn., Sp. Pl., ed. 1, p. 264 (1753)
(*Helosciadium* Koch)

Flowers bisexual. *Calyx-teeth* 5, or teeth obsolete. *Petals* ovate, often acute, sometimes with an incurved apiculus. *Disc* depressed or shortly conical. *Stamens* about as long as the petals; filaments filiform; anthers oblong. *Styles* obsolete. *Fruit* suborbicular, ovate, or oblong in outline, sometimes laterally compressed, often didymous. *Mericarps* with 5 prominent rounded primary veins which are sometimes crenate-undulate, flat on the face; oil-tubes 6, 1 in each furrow and 2 on the face. *Carpophore* undivided or shortly bifid. *Seed* subterete.

Annual or perennial herbs, often growing in damp places; leaves pinnate or tripinnately decomposed, with the leaf segments broad or filiform; inflorescence a simple axillary umbel or a compound umbel; involucre-bracts few, solitary, or 0; involucels of many bracts or 0.

Described species about 73, found in most parts of the world; 2 species in South Africa, extending from the Transvaal, Basutoland, Natal, the Orange Free State to the Riversdale district, also recorded from South West Africa, the Kuruman district, Griqualand West, and the Somerset East district. (Type: *A. graveolens* Linn.)

6013 15. PITURANTHOS Viv., Fl. Lybic., p. 15, t. 7 (1824)

(*Pityranthus* Viv.; *Deverra* DC.)

Flowers bisexual. *Calyx-teeth* obsolete. *Petals* ovate, inflexed at the apex, keeled on the face. *Disc* conical, dilated at the base, with an undulated margin. *Stamens* longer than the petals; filaments linear; anthers oblong. *Ovary* pilose or scabrid; styles very short, thick. *Fruit* elliptic in outline, slightly laterally compressed, hirsute, pilose, scaly, or scabrid. *Mericarps* subterete, with the primary veins distinct, flat on the face; oil-tubes 6, 4 in furrows, 2 on the face. *Carpophore* 2-partite. *Seed* flat on the face, convex on the back.

Rigid perennial herbs or broom-like undershrubs, usually with deep rootstocks; stems usually terete; leaves undeveloped or radical or at the base of the stems, tripinnately decompound; cauline leaves few or all reduced to scales; inflorescence a compound umbel; involucre and involucels of few bracts or 0.

Species about 10, natives of Africa and the Orient; 2 species in South Africa found in the Transvaal, the Orange Free State, and the central districts generally; also recorded from Barkly West, Bechuanaland, South West Africa, Namaqualand, to the Clanwilliam district. (Type: *P. denudatus* Viv.=*P. chloranthus* (Coss. & Durien) Bth. et Hook. f.)

6014a 16. TRAGIOPSIS Pomel, Nouv. Mater. Fl. Atlant., p. 139 (1874)

Flowers bisexual. *Sepals* obsolete. *Petals* obovate, inflexed at the apex. *Stamens* longer than the petals; filaments linear; anthers oblong. *Disc* depressed or subconical. *Ovary* glandular; styles shorter than the ovary, terete; stigma simple. *Fruit* broadly ovate in outline, laterally compressed, subdidymous, glandular. *Mericarps* with a broad channel on the inner face, very convex on the back, with 4—5 not very evident nerves; oil-tubes 6, 2 on the inner face. *Carpophore* bipartite. *Seed* terete.

Low annual herbs, sometimes with a long thin tap-root; leaves bi- or tripinnatisect, with the ultimate segments narrow; umbels lateral and terminal; involucre and involucels of small bracts.

Species 3, found in the Mediterranean region; 1 species occurs in South Africa and recorded from the south-western districts of the Cape Province. (Type: *T. dichotoma* (L.) Pomel)

NOTE.—The South African species is the plant described in the *Flora Capensis* under *Ptychotis didyma* Sond.—E. P. P.

6017a 17. SONDERINA Wolff, in Engl. Pflanzenreich, vol. 4, pt. 228, p. 92 (1927)

(*Ptychotis* Sond. in Fl. Cap., ex parte non Koch)

Flowers bisexual. *Calyx-teeth* very small or almost obsolete. *Petals* obovate or subquadrate, bifid or emarginate, with the tip long inflexed, keeled on the inner face. *Disc* cushion-like. *Stamens* longer than the petals; filaments filiform; anthers ovate. *Ovary* sometimes covered with protuberances; styles about as long as the ovary; stigmas subcapitate. *Fruit* subcompressed, ovate or oblong in outline, smooth, scabrid, or hispid. *Mericarps* with 5 ribs, flat on the face, convex on the back; oil-tubes 6, 1 in each furrow and 2 on the face. *Carpophore* bipartite.

Annual herbs, glabrous or setulose-hispid; leaves 1—2-pinnatisect or subtripinnate, with the segments narrow-oblong, linear or filiform; inflorescence a compound umbel; involucre and involucels of a few narrow bracts.

Endemic; species 4, recorded from the Calvinia district and from Clanwilliam to the Knysna and Humansdorp and Port Elizabeth districts; also recorded from Natal. (Type: *S. hispida* (Thunb.) Wolff—*Ptychotis hispida* (Thunb.) Sond.)

6020 18. CHAMAREA E. & Z., Enum. Pl. Afr. austr. extratrop., vol. 3, p. 346 (1837)

(*Carum* Sonder in Fl. Cap. non Linn.; *Schlechterosciadium* Wolff;
Trachysciadium E. & Z.)

Flowers bisexual. *Calyx-teeth* obsolete or nearly so. *Petals* obovate or elliptic, with a long inflexed apex, keeled on the inner face. *Disc* shortly conical. *Stamens* slightly shorter than the petals; filaments terete; anthers elliptic. *Styles* short. *Fruit* ovate in outline, ribbed. *Mericarps* flat on the face, convex on the back, with 5 prominent ribs; oil-tubes 6, 1 in each furrow, 2 on the face. *Carpophore* bipartite. *Seed* semi-terete.

Perennial herbs with thick tuberous roots; leaves appearing after flowering, pinnate, with the segments or leaflets multifid; inflorescence a compound umbel; involucre and involucel often wanting.

Endemic; species 1, extending from Namaqualand to the Uitenhage and Albany districts; also recorded from the Calvinia, Oudtshoorn, and Fauresmith districts. (Type: *C. capense* (Thunb.) E. & Z.=*Carum capense* (Thunb.) Sond.)

6033 19. PIMPINELLA Linn., Sp. Pl., ed. 1, p. 263 (1753)

Flowers bisexual. *Calyx-teeth* obsolete or evident. *Petals* obovate or elliptic, inflexed at the apex, glabrous, hirsute or villous. *Disc* cushion-shaped, or broadly or narrowly conical. *Stamens* longer than the petals; filaments terete; anthers oblong, slightly divided above. *Styles* longer than the disc, terete; stigmas subcapitate. *Fruit* ovate in outline or broader than long, slightly laterally compressed, glabrous or hairy, crowned with the disc and styles. *Mericarps* flat on the face, convex on the back, prominently 5-ribbed; oil-tubes about 9, 2 of which are on the inner face. *Carpophore* 2-fid or 2-partite. *Seed* semi-terete.

Perennial, rarely annual, herbs; leaves often radical, pinnate, ternate, or pinnately decompound, rarely undivided and toothed; the lower leaves sometimes petioled, ovate, cordate, toothed; the upper leaves divided; inflorescence a compound umbel; involucre and involucel wanting or of few, rarely many, bracts.

Species about 200, found in all temperate, tropical, and subtropical countries; 3 species occur in South Africa, extending from the Transvaal, Basutoland, Zululand, and Natal to the Uniondale and Humansdorp districts. (Type: *P. saxifraga* Linn.)

6038a 20. BERULA Koch, in Rohl. Deutschl. Fl., vol. 2, p. 433 (1826)

(*Sium* Linn. of the Fl. Cap.)

Flowers bisexual. *Calyx-teeth* 5, small, acute. *Petals* obcordate, with an inflexed point, keeled on the face. *Disc* depressed or conical, with an entire margin. *Stamens* exceeding the petals; filaments filiform; anthers oblong. *Styles* terete, subcapitate. *Fruit* ovate or oblong in outline, laterally compressed, ribbed. *Mericarps* very convex on back, slightly keeled on the face, 5-ribbed; oil-tubes 6, 2 on the face. *Carpophore* bipartite. *Seed* subterete.

Sometimes aquatic herbs; leaves pinnate, with the pinnae toothed; inflorescence a compound umbel; involucre and involucels of many long-persistent bracts.

Species 2, natives of Africa, Asia, North and South America; 1 species in South Africa, extending from the Transvaal, Natal, Basutoland, the Orange Free State, to the Riversdale district; also found in the north-western and some central districts. (Type: *B. erecta* (Huds.) Coville)

6045 21. POLEMANNIA E. & Z., Enum., p. 347 (1837)

Flowers bisexual. *Calyx-teeth* short, ovate, persistent. *Petals* elliptic, entire, inflexed at the apex, keeled on the inner face. *Disc* conical. *Stamens* slightly longer than the petals; filaments terete; anthers elliptic. *Styles* almost obsolete. *Fruit* oblong or ovate in outline, compressed. *Mericarps* dorsally compressed, oblong in outline, flat on the face, convex on the back, prominently 3-nerved on the back, distinctly winged on the margins; oil-tubes 6, 2 of which are on the inner face of mericarp. *Carpophore* bipartite. *Seed* plano-convex in cross-section.

Glabrous shrubs; leaves digitately 3-foliolate; leaflets obovate, cuneate at the base and shortly 3-lobed, sometimes deeply lobed and serrate; inflorescence a compound umbel, sometimes the umbels arranged in panicles on leafless stems; involucre and involucels of a few bracts.

Endemic; species 2, recorded from Zululand, Natal, and the eastern districts to the Katberg; also recorded from the Queenstown district and the Gariep. (Type: *P. grossulariaefolia* (E. Mey.) E. & Z.)

6046a 22. THUNBERGIELLA Wolff, Engl. Pflanzenreich, vol. 4, no. 223, p. 139 (1927)

(*Oenanthe* Linn. of the Fl. Cap.)

Flowers bisexual. *Calyx-teeth* ovate, acuminate, acute. *Petals* obovate, with a long-inflexed apex, keeled on the face. *Disc* conical. *Stamens* longer than the petals; filaments linear; anthers elliptic, subdidymous. *Styles* short, subterete. *Fruit* oblong in outline, ribbed, crowned with the persistent styles. *Mericarps* oblong in outline, semi-terete, flat on the face, with 5 prominent ribs; oil-tubes 6, 2 of which are on the inner face. *Carpophore* 0. *Seed* semi-terete.

Glabrous herbs, with fleshy cylindric roots; basal leaves grass-like; cauline leaves narrow-linear; inflorescence a compound umbel; involucre and involucel of a few bracts.

Endemic; species 1, recorded from the south-western districts of the Cape Province to the George, Knysna, and Humansdorp districts. (Type: *T. filiformis* (Lam.) Wolff)

6069 23. CNIDIUM Cusson., Mém. Soc. Med. Paris, p. 280 (1782)

Flowers bisexual. *Calyx-teeth* absent or short, ovate, acuminate, acute. *Petals* ovate, obovate, or elliptic, with inflexed apices, keeled on the face. *Disc* short, conical. *Stamens* longer than the petals; filaments subterete; anthers elliptic. *Styles* very short. *Fruit* elliptic in outline, winged. *Mericarps* flat on the face, with 5 prominent wings, with a single oil-tube under each furrow and 2 on the inner face. *Carpophore* bipartite. *Seed* terete.

Decumbent or erect perennial herbs or undershrubs; leaves mostly pinnatifid or multifid; inflorescence a compound terminal or lateral umbel; involucre 0 or of a few bracts; involucel of several small bracts.

Species about 15, natives of Europe and Asia; 1 species in South Africa, found on the sea-coast from the Cape to Natal. (Type: *C. monnieri* Cuss.)

6078 24. ANNESORRHIZA Cham. & Schecht., *Linnaea*, vol. 1, p. 398 (1826)

Plants monoecious. *Male flowers*:—*Calyx-teeth* 5, usually small, sometimes obsolete. *Petals* elliptic, with inflexed apices, keeled on the face. *Disc* broadly conical or cushion-like. *Stamens* longer than the petals; filaments linear; anthers subdidymous. *Female flowers*:—*Calyx* and *petals* as in the male. *Styles* small. *Fruit* prismatic, crowned with the persistent calyx-teeth and disc. *Mericarps* usually unequal, more rarely equal, flat on the inner face, winged or prominently veined, usually one 3-winged and the other 4-winged; oil-tubes 6, 2 on the inner face. *Carpophore* bipartite. *Seed* dorsally compressed, terete, or concave-convex in cross-section, flat or grooved on the face.

Erect biennial or perennial herbs, with tuberous or large cylindric roots; leaves appearing after the flowers; radical leaves sometimes large, petioled, pinnatifid or multiset, or pinnate with the pinnae lobed; cauline leaves small and scale-like; inflorescence an umbel of many rays; involucre and involucels of small bracts.

Endemic; species about 12, extending from the Transvaal and Natal to the Clanwilliam district. (Type: *A. capensis* (Thunb.) Cham. & Schlecht.)

6103 25. CAPNOPHYLLUM Gaertn., *Fruct.*, vol. 2, p. 32, t. 85 (1791)

Flowers unisexual. *Calyx-teeth* small or absent. *Petals* elliptic, with an inflexed apex. *Disc* cushion-shaped. *Stamens* longer than the petals; filaments linear; anthers elliptic, subdidymous. *Fruit* elliptic in outline, ribbed. *Mericarps* convex on the back, concave on the face and with a slight median keel, with 3 tuberculed dorsal veins and winged lateral veins; oil-tubes 6, 2 on the face. *Carpophore* 2-partite. *Seed* more or less oblong in cross-section.

Diffuse or laxly branched annual herbs; leaves 2—3-pinnate, with the ultimate segments linear; umbels lateral and terminal; involucre and involucels of a few bracts.

Species 4, natives of Africa, the Canary Islands, and the Mediterranean region; 1 species found in a few of the south-western districts of the Cape Province. (Type: *C. africanum* Gaertn.)

6116 26. PEUCEDANUM Linn., *Sp. Pl.*, ed. 1, p. 244 (1753)

(*Bubon* Linn.; *Lefeburia* A. Rich.; *Seseli* Linn. of the *Fl. Cap.*, partly)

Flowers bisexual. *Calyx-teeth* 5 or nearly absent. *Petals* obovate, oblanceolate, or cuneate, emarginate or subentire, inflexed at the apex, keeled on the face. *Disc* mostly conical, sometimes crenate on the margin. *Stamens* slightly longer than the petals; filaments subterete; anthers ovate. *Styles* short, thick. *Fruit* usually flattened, sometimes biconvex, capped with the persistent disc and styles, ribbed, with a narrow flattened margin or winged. *Mericarps* slightly convex on the back, flat or concave on the face, usually channelled on the face, 3-veined on the back, usually winged on the margins; oil-tubes large and conspicuous, usually 6 with 2 on the inner face, more rarely up to 10 and 4 on the inner face. *Carpophore* divided. *Seed* oblong, linear, or plano-convex in cross-section.

Glabrous perennial herbs or shrubs, often acaulescent and with large deep tap-roots; leaves usually tripinnate or multifid, with the ultimate leaf-segments sometimes linear or filiform or needle-like or ovate and toothed, rarely leaves simple and grass-like; inflorescence usually a many-rayed umbel; involucre and involucels, of many or few bracts.

Species about 200, found in Europe, Asia, and Africa; 28 species occur in South Africa, extending from South West Africa, the Transvaal, Swaziland, Basutoland, Zululand, Natal, and the Orange Free State to the south-western districts of the Cape Province. (Type: *P. officinale* Linn.)

6116a 27. STEGANOETIA Hochst., in Flora, vol. 27, Beibl. 4 (1844)

Flowers bisexual and male. *Maleflower*:—*Calyx-teeth* small, ovate, acuminate. *Petals* obovate, with long inflexed apices, keeled on inner face. *Disc* cushion-shaped, flat. *Stamens* longer than the petals; filaments terete; anthers oblong. *Styles* rudimentary. *Bisexual flower*:—*Calyx-teeth*, *petals*, and *stamens* as in the male flower. *Disc* slightly concave. *Ovary* obovate in outline; styles terete, about $\frac{1}{2}$ as long as the stamens. *Fruit* compressed, obovate in outline, ribbed, winged. *Mericarps* convex on the back with 3 prominent raised acute veins, winged on the margin, flat on the face with a narrow channel; oil-tubes inconspicuous. *Carpophore* bipartite. *Seed* plano-convex in cross-section.

A small tree up to 20 ft. high, with somewhat waxy bark; leaves crowded at the apex of branchlets, petioled, pinnate; leaflets ovate, acuminate, setose on the margins; inflorescence a compound umbel; involucre and involucels of a few bracts.

An African genus of 2(?) species; 1 species found in South West Africa, Ngamiland, Bechuanaland Protectorate, and the northern Transvaal. (Type: *S. araliacea* Hochst.)

6129 28. CHORITAENIA Benth., in Benth. & Hook. f. Gen. Plant., vol. 1, p. 907 (1867)

(*Pappea* Sond. & Harv. non E. & Z.)

Flowers bisexual. *Calyx-teeth* short, ovate. *Petals* ovate, with a short inflexed apex, almost biconvex in cross-section, keeled on the face, channelled on the back. *Disc* slightly raised, with the margin somewhat undulate. *Stamens* as long as the petals; filaments filiform; anthers oblong. *Ovary* villous; styles distinct, somewhat linear. *Fruit* orbicular, somewhat biconvex, crowned with the persistent disc and styles, covered with long, rather stiff, club-shaped hairs mixed with finer hairs. *Mericarps* convex on the back, flat on the face with a median rib; oil glands(?) 9—13, forming separate pockets in the wing. *Carpophore* bipartite. *Seed* linear in cross-section.

An annual prostrate herb, with many stems; leaves irregularly subternately cut; inflorescence an umbel arising from the base of the stem at the origin of the branches and also from the apices of the branches; involucre and involucel similar to the leaves.

Endemic; species 1, recorded from British Bechuanaland, the Transvaal, and parts of the Orange Free State and the Herbert and Barkly West districts of the Cape Province. (Type: *C. capensis* (Sond. & Harv.) Benth.)

145. CORNACEAE

Flowers regular, unisexual or bisexual. *Calyx-tube* adnate to the ovary, 4—5-lobed or truncate. *Petals* 4—5, rarely none, free, valvate or imbricate. *Stamens* as many as the petals and alternating with them; anthers 2-theous, opening by lateral slits. *Disc* various. *Ovary* inferior, 1—4-chambered, with a solitary pendulous ovule in each chamber; style short or elongated; stigma various. *Fruit* a drupe or berry, 1—4-locular. *Seed* often solitary; embryo often small; endosperm copious.

Trees or shrubs, rarely perennial herbs; leaves opposite or alternate, simple, entire, lobed or serrated; stipules 0; inflorescence an axillary or terminal panicle or cyme, more rarely a head surrounded by an involucre.

Genera 15; species over 100, most abundant in the temperate regions of the northern hemisphere.

6156 CURTISIA Ait., Hort. Kew., ed. 1, vol. 1, p. 162 (1789)

Flowers bisexual. *Calyx-tube* turbinate, somewhat 4-angled; limb 4-lobed; lobes triangular-ovate. *Petals* 4, almost twice as long as the calyx-lobes, ovate, pubescent without, valvate. *Stamens* 4, about as long as the petals and alternating with them; filaments subterete; anthers ovate, 2-theous. *Disc* tumid, 4-angled, pubescent. *Ovary* 4-chambered, with a solitary ovule in each chamber; style shorter than the stamens, terete; stigma 4-lobed. *Fruit* a drupe, about the size of a small pea, crowned with the persistent calyx-lobes, reticulately veined, 4-locular and 4-seeded, sometimes fewer by abortion. *Seed* sometimes solitary, oblong in outline; embryo straight, very small in relation to size of the seed; endosperm fleshy, copious.

A tree; leaves leathery, opposite, simple, petioled, ovate, elliptic or oblong, coarsely toothed, shining above, prominently veined and pubescent beneath; petiole pubescent-tomentose; inflorescence a terminal trichotomous pubescent-tomentose panicle; flowers small.

Endemic; species 1, extending from the Cape to Natal and the northern Transvaal. (Type: *C. faginea* Ait.)

146. ERICACEAE

Flowers bisexual, regular. *Calyx* divided to the base or segments connate to form a tube, 4—5-toothed, -lobed, or -partite, with the lobes sometimes unequal, very rarely much compressed and 2-lobed, small or exceeding the corolla. *Corolla* gamopetalous, hypogynous, rarely arising from the middle of the ovary or from the top of an inferior ovary, usually 4-lobed, more rarely 5—10-lobed or 2-lobed, or of 3—7 free petals, deciduous or persistent, imbricate, contorted, or valvate in bud, often showy. *Disc* 0 or annular, or tumid, crenate or lobed. *Stamens* normally 4 or 8, or from 3—14, hypogynous, epigynous, or adnate to the base of the corolla, very rarely attached to the middle of the ovary; filaments free or connate; anthers basifixed or dorsifixed, free or connate, 2-theous; thecae often free to the middle or beyond, with or without apical or basal appendages, opening by pores or by longitudinal slits or produced at the apex into tubes. *Ovary* superior or inferior, rarely half-inferior, 1—12-chambered, with one to many axile pendulous or rarely erect ovules in each chamber; style filiform or cylindric; stigma simple, capitate, or peltate, entire, lobed, or toothed. *Fruit* usually a loculicidal or septicidal capsule, rarely baccate or drupaceous, 1 to many-seeded. *Seeds* usually very small.

Shrubs or undershrubs or small trees, sometimes epiphytes; leaves alternate, opposite, or whorled, broad or ericoid; stipules 0; inflorescence various; pedicels often bracteate.

Genera about 73; species over 1,500, distributed in all parts of the world.

NOTE.—Adamson and Salter, *Flora of the Cape Peninsula*, p. 627 (1950), accept the classification of the genera as given in the *Flora Capensis*.—E. P. P.

- | | | |
|--|-------------------------------|---|
| 1. Leaves broad, lanceolate, serrate ... | 1. <i>Vaccinium</i> Linn. | |
| Leaves ericoid... .. | | 2 |
| 2. Ovary adnate to the corolla-tube ... | 8. <i>Lagenocarpus</i> Klotz. | |
| Ovary superior, free from the corolla-tube ... | | 3 |

- | | | | | | | |
|---|-----|-----|-----|-----|-----|---|
| 3. Ovule solitary in each ovary-chamber | ... | ... | ... | ... | ... | 4 |
| Ovules 2 or more in each ovary-chamber | ... | ... | ... | ... | ... | 7 |
| 4. Ovary 1-chambered | ... | ... | ... | ... | ... | |
| Ovary 2- or more-chambered | ... | ... | ... | ... | ... | 5 |
| 5. Calyx flattened, 2-lobed; corolla 2-lobed | ... | ... | ... | ... | ... | |
| Calyx and corolla not as above | ... | ... | ... | ... | ... | 6 |
| 6. Stigma peltate, cup-shaped, or saucer-shaped | ... | ... | ... | ... | ... | |
| Stigma simple | ... | ... | ... | ... | ... | |
| 7. Calyx-lobes usually unequal, if equal the stamens normally 4 | ... | ... | ... | ... | ... | |
| Calyx-lobes equal; stamens normally 8 | ... | ... | ... | ... | ... | |

7. *Salaxis* Salisb.4. *Eremia* D. Don3. *Blaeria* Linn.2. *Erica* Linn.**6216 1. VACCINIUM** Linn., Sp. Pl., ed. 1, p. 349 (1753)

Calyx-tube adnate to the ovary; lobes 4—5, ovate. *Corolla-tube* tubular-campanulate or variously shaped, 4—5-toothed or -lobed. *Stamens* 8—10, attached to the base of the corolla-tube; filaments linear, hairy; anthers produced into 2 long tubes opening by pores or slits at the apex, sometimes spurred on the back. *Ovary* inferior, 4—5-chambered or falsely 10-chambered owing to the intrusion of false partitions from the placenta, with few to numerous ovules in each chamber; style sometimes about as long as the stamens, cylindric; stigma simple or subcapitate. *Fruit* a berry, about the size of a small pea, crowned with the persistent calyx-lobes, 4—5-locular, with few to many seeds in each loculus. *Seeds* somewhat flattened or irregularly angled, with a reticulated testa.

Shrubs or undershrubs, rarely trees, leaves alternate, evergreen or deciduous, often lanceolate, entire or serrulate; inflorescence a short raceme or flowers in fascicles, rarely solitary, usually bracteate.

Species over 500, chiefly natives of the north temperate zone and mountains of the tropics; 1 species found in the north-eastern Transvaal. (Type: *V. myrtillus* Linn.)

NOTE.—Placed by some authors in a separate family, the *Vacciniaceae*.—E. P. P.

6237 2. ERICA Linn., Sp. Pl., ed. 1, p. 352 (1753)

Calyx mostly 4-partite, rarely 4-fid or 4-toothed, sometimes more prominent than the corolla (flowers calycine). *Corolla* tubular, ureolate, inflated, widened or constricted at the mouth, usually 4-lobed, less commonly 4-fid, rarely sub-4-partite, with the lobes sometimes arranged in a star-like manner, deciduous or rarely persistent. *Stamens* normally 8, rarely fewer or more; filaments free; anthers terminal or lateral, opening by lateral pores or slits, mostly with an appendage of various shapes. *Ovary* sessile or shortly stalked, mostly 4- (rarely 8-) chambered, with 2 to many ovules in each chamber; style filiform; stigma simple, capitate, peltate or cyathiform, very rarely 4-fid. *Capsule* variously shaped, with loculicidal dehiscence. *Seeds* minute.

Perennial shrubs varying in height from a few inches up to 10 ft., rarely more; leaves 3—6-nate in whorls, less commonly scattered or opposite, mostly rigid and narrow, linear, trigonous, with the margins revolute and connate with the underside leaving only a wide or narrow channel, less commonly flatter, broader and "open backed"; inflorescence an umbel or head, mostly terminal, often clustered in the leaf-axils at the ends of partially or entirely arrested lateral branchlets, very rarely truly indefinite and racemose or flowers solitary or more commonly 2—4-nate;

flowers varying from very small to large and showy; pedicels 1-flowered, with 3 bracts, rarely bracts fewer or very rarely 0.

Species over 500, natives of Africa, Europe, and the Orient, almost 500 species in South Africa, mostly massed in the south-western districts of the Cape Province, but found all in the eastern coastal belt, in Natal, and the north-eastern Transvaal; absent from the central districts. (Type: *E. tetralix* Linn.)

6242

3. BLAERIA Linn., Sp. Pl., ed. 1, p. 112 (1753)

Calyx sometimes with a campanulate tube; lobes or segments 3—4, often unequal. *Corolla* longer or scarcely as long as the calyx; tubes campanulate, tubular-campanulate, or tubular, often angled; lobes 3—4, much shorter than the tube. *Stamens* 2—8, exserted or included; filaments sometimes membranous or more or less rigid, linear or filiform, free or connate; anthers shorter or longer than the filaments, free or connate, often spurred at the base, often minutely tuberculed, opening by oblique pores or slits, with the thecae divided to the base or almost so. *Ovary* 1—3-chambered, with 2—5, rarely more, ovules in each chamber; style cylindric, usually exserted; stigma simple, subcapitate, peltate or saucer-shaped. *Fruit* a 2—4-valved loculicidal capsule, sometimes unilocular, with 1 to few seeds in each locus.

Shrubs or shrublets; leaves ericoid, usually convex and grooved on the back, rarely open-backed; inflorescence various, flowers normally small; bracts 2—3 or 0.

An African and Madagascar genus of about 70 species; about 26 species found in South Africa, extending from the northern Transvaal to the south-western districts of the Cape Province to the Clanwilliam district; also recorded from the Graaff Reinet and Queenstown districts. (Type: *B. ericoides* Linn.)

NOTE.—Includes the genera *Coccosperma* Klotz., *Thamnus* Klotz., *Ericinella* Klotz., *Philippia* Klotz.—E. P. P.

6243

4. EREMA D. Don, in Edinburgh New Phil. Journ., vol. 17, p. 156 (1834)

Calyx lobed or partite almost to the base, rarely nearly flat and square in outline; tube when present campanulate or tubular-campanulate, sometimes angled or ribbed; lobes or segments 4, shorter than the tube. *Corolla* slightly exceeding or much longer than the calyx; tube urceolate, campanulate, cup-shaped, subglobose, or tubular, often angled; lobes 4, very rarely only 2, much shorter than the tube. *Stamens* 4—8, free, exserted from or included in the corolla; filaments linear or filiform; anthers 2-lobed or divided to the base, sometimes spurred, sometimes tuberculate or hirsute. *Ovary* 2—4-chambered, with 1 pendulous ovule in each chamber; style cylindric or filiform, usually exserted; stigma simple, subcapitate, or subpeltate, or minutely 4-lobed.

Small shrubs or shrublets; leaves ericoid, convex and grooved on the back, rarely flat; flowers small, in terminal clusters or on short lateral branchlets or in few-flowered globose heads, or 1—6 together; bracts 1—3, sometimes absent.

Endemic; species about 72, extending from the Clanwilliam and Van Rhynsdorp districts to the Uitenhage district. (Type: *E. totta* (Thunb.) D. Don)

NOTE.—Includes the genera *Aniserica* N. E. Br., *Thoracosperma* Klotz., *Simocheilus* Klotz., *Acrostomone* Klotz., *Grisebachia* Klotz., *Hexastemon* Klotz., *Platycalyx* N. E. Br., *Arachnocalyx* Compt.—E. P. P.

6245

5. SYMPIEZA Licht., ex Roem. & Schultes, Syst., vol. 3, p. 171 (1818)

Calyx of the lowest or of all the flowers dorsally flattened, 2-edged, 2-lobed, of the central and upper flowers sometimes 3—4-angled and 3—4-lobed, glabrous or hairy. *Corolla* longer than the calyx, tubular, funnel-shaped, or cylindric below and campanulate above, 2-lobed. *Stamens* 4, more or

less exerted; filaments linear; anthers bipartite, without spurs, often scabrid. *Ovary* 2-chambered, with a solitary pendulous ovule in each chamber; style linear, exerted; stigma simple or slightly thickened or minutely capitate. *Fruit* apparently 2-locular.

Small shrubs or shrublets; leaves ericoid, grooved and convex on the back; flower-heads terminal, subglobose, erect or nodding; flowers subsessile, solitary in the axils of bracts the lower of which are leaf-like; bracts (besides the floral leaves) 0, or rarely 2.

Endemic; species 8, extending from the Cape and Caledon districts to the Swellendam district. (Type: *S. capitellata* Licht.)

6246 6. SCYPHOGYNE Brongn., in Duperrey Bot. Voy. Coquille, t. 54 (1829)

Calyx-tube campanulate or funnel-shaped, sometimes angled; lobes 3—4, about as long as or much shorter than the tube. *Corolla* shorter or longer than the calyx; tube campanulate, tubular, funnel-shaped or tubular or cylindric below and campanulate or globose above; lobes 3—4, much shorter than the tube. *Stamens* 3—8, included or exerted; filaments sometimes membranous and connate or linear and free; anthers longer than the filaments, notched at the apex or bipartite to the base, with or without spurs, rarely with the connective produced and fleshy and glandular, opening by oblique pores or slits. *Ovary* 1-chambered, with a solitary pendulous ovule; style cylindric or linear, as long as the stamens or sometimes exerted; stigma simple, capitate or thickened or large and peltate or crater-like.

Small shrubs or shrublets; leaves ericoid, convex and grooved on the back; flowers very small, 1—3 together, axillary and terminal or several in small globose heads, sessile or shortly pedicellate; bracts 1—3 or 0.

Endemic; species 47, extending from the Clanwilliam to the George and Uniondale districts. (Type: *S. muscosa* (Ait.) Druce=*S. inconspicua* Brongn.)

NOTE.—Includes the genera *Syndesmanthus* Klotz., *Anomalanthus* Klotz., *Leperica* N. E. B.—E. P. P.

6248 7. SALAXIS Salisb., Trans. Linn. Soc., vol. 6, p. 317 (1802)
(*Coilostigma* Klotz.)

Calyx divided almost to the base or with a saucer-shaped tube; lobes 4, unequal. *Corolla* shorter or longer than the calyx, often hairy; tube globose, urceolate, ovoid, cylindric, or campanulate; lobes 4, shorter than the tube. *Stamens* usually 4 or 8, more rarely 6 or 9, included or slightly exerted, often forming a ring within the corolla; filaments linear or sometimes membranous and oblong, variously connate or free; anthers lobed above or divided almost to the base, without spurs, opening by oblique slits or pores. *Ovary* 2—4-chambered, sometimes angled, with a solitary ovule in each chamber; style shorter than the stamens or exerted, sometimes becoming lateral in the fruit owing to the abortion of an ovary-chamber; stigma sometimes small, usually large, peltate, crater-like, cup-shaped, or saucer-shaped, sometimes completely covering the mouth of the corolla-tube. *Fruit* apparently indehiscent.

Small shrubs or shrublets; leaves ericoid, convex and grooved on the back; flowers small, often in small clusters; bracts present or absent.

Endemic; species 11, extending from the Clanwilliam to the Port Elizabeth and Albany districts. (Type: *S. axillaris* (Thunb.) Salisb.)

6248b 8. LAGENOCARPUS Klotzch., in Linnaea, vol. 12, p. 214 (1838)

Calyx-tube campanulate; lobes 4, very rarely 5, unequal, one larger than the rest. *Corolla* shorter or scarcely longer than the calyx; tube campanulate,

adnate to the ovary in the lower half; lobes 4, rarely 5, ovate, shorter than the tube. *Stamens* usually 8, occasionally 7, included, arising from the ovary or from the base of the free portion of the corolla-tube; filaments membranous, very short, connate into a tube, often becoming more or less torn asunder by the enlargement of the ovary; anthers longer than the filaments, connate for $\frac{1}{2}$ their length, notched at the apex. *Ovary* quite free from the calyx, but partly adnate to the corolla-tube, 1-chambered, with 4—5 pendulous ovules from near the apex of a central placenta which is only attached at the apex and base, usually only one ovule developed; stigma saucer-shaped, with inturred margins, pubescent beneath.

Small shrubs or shrublets; leaves ericoid, grooved down the back; flowers 1—3 together, terminal or on minute axillary branchlets which are shorter than the leaves; bracts 0.

Endemic; species 2, extending from the Paarl to the Bredasdorp district. (Type: *L. serrata* (Thunb.) Phill.=*L. imbricatus* Klotz.)

NOTE.—As pointed out by N. E. Brown in the *Flora Capensis* it needs careful dissection to see the ovules. Usually only 1 ovule develops and the others are represented by membranous scales; only in young flowers are all the ovules clearly seen.—E. P. P.

147. MYRSINACEAE

Plants sometimes dioecious. *Flowers* bisexual or unisexual, 5- or 4-merous, regular. *Calyx* 4—5-fid or -partite, sometimes sepals free; lobes or sepals valvate, imbricate, or contorted, usually persistent. *Corolla* rotate, rarely campanulate or tubular, sometimes petals free; lobes or petals contorted or imbricate, rarely valvate. *Stamens* as many as the corolla-lobes or petals and opposite to them, included or exserted; filaments adnate to the corolla-tube, rarely almost free, sometimes connate; anthers sometimes sessile or subsessile, 2-theous; staminodes none or 1 opposite each sinus of the corolla, rarely also opposite the corolla-lobes. *Ovary* superior, more rarely $\frac{1}{2}$ -inferior, 1-chambered, with 1 or few or many ovules on a free-central or basal placenta; style simple, sometimes absent; stigma discoid, ovoid, or merely thickened, sometimes sessile. *Fruit* dry or fleshy, 1- to many-seeded. *Seed* globose, or angled, sometimes with a convolute testa; embryo straight; cotyledons usually flat; endosperm fleshy or horny.

Trees or shrubs, rarely subherbaceous; leaves alternate, rarely opposite or subopposite, often crowded at the ends of the branches, petioled or sessile, entire or toothed, punctate or with lepidote scales; stipules 0; inflorescence terminal or lateral, a raceme or panicle, or flowers in clusters in the axils of the leaves or on the old branches; flowers usually small.

Genera 32, species about 1,000, mostly tropical.

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|--|-------------------------|---|
| 1. Ovary inferior or $\frac{1}{2}$ -inferior | 1. <i>Maesa</i> Forsk. | 2 |
| Ovary superior | | |
| 2. Leaves usually less than 1 in. long, closely serrated | 3. <i>Myrsine</i> Linn. | |
| Leaves usually over 1 in. long, entire or remotely serrated | | 3 |
| 3. Anthers sessile or subsessile | 4. <i>Rapanea</i> Aubl. | |
| Filaments evident | 2. <i>Embelia</i> Burm. | |

6283

1. *MAESA* Forsk., Fl. Aeg. Arab., pl. 66 (1775)

Calyx persistent, bibracteate at the base; segments or lobes usually 5, more rarely 4, elliptic, imbricate or quincuncial. *Corolla* longer than the calyx; tube campanulate, rarely urceolate; lobes usually 5, more rarely 4 or 6,

slightly longer than the tube, elliptic. *Stamens* usually 5, more rarely 4 or 6, inserted in the corolla-throat or below the throat, included, in some flowers sometimes functionless; filaments linear, very rarely almost 0; anthers oblong. *Ovary* inferior or $\frac{1}{2}$ -inferior, with numerous ovules on a basal placenta; style included, cylindric; stigma capitate or obscurely 2—3-lobed. *Fruit* dry or fleshy, small, globose, crowned with the persistent calyx-segments and style. *Seeds* several, brown, sometimes angled, sometimes with a convoluted testa; embryo straight; cotyledons flat or semi-terete; endosperm copious.

Trees or shrubs; leaves alternate, petioled, elliptic or obovate, penninerved, sometimes gland-dotted, serrate, sometimes large; inflorescence an axillary or terminal panicle or raceme, many-flowered; flowers white, small.

Species about 125, natives of Africa and Asia; 3 species in South Africa, found in the Transvaal, Swaziland, Zululand, Natal, and in the coastal districts to the East London district. (Type: *M. lanceolata* Forsk.)

6310 2. EMBELIA Burm., Fl. Ind., p. 62, t. 23 (1768)

Flowers often unisexual. *Calyx* 4—5-partite, -fid, or -lobed, sometimes almost free; lobes or segments ovate, imbricate, quincuncial. *Petals* longer than the calyx, 4—5, free, spreading or reflexed, imbricate or quincuncial, sometimes glandular. *Stamens* subequalling or longer than the petals, rarely much shorter, 4—5, free, variously attached to the petals; filaments linear; anthers ovate. *Ovary* in the male flower much reduced; in the female flower subglobose or ovoid, often pilose, with a single ovule; style included or exserted; stigma discoid, entire, very rarely lobed. *Fruit* globose, rarely depressed or obovoid. *Seed* with a straight embryo and flat cotyledons; endosperm copious.

Shrubs or small trees, sometimes scandent; leaves alternate, often obovate, mostly entire; inflorescence a raceme or panicle; flowers white, greenish, or yellowish, small.

Species about 125, mostly natives of Asia, Africa, and Madagascar; 1 species in South Africa, extending from Natal to the Komgha district. (Type: *E. ribes* Burm.)

6313 3. MYRSINE Linn., Sp. Pl., ed. 1, p. 196 (1753)

Flowers often unisexual. *Calyx* 4—5-partite, sometimes petals free, usually imbricate, sometimes glandular. *Corolla* longer than the calyx; tube very short, rarely $\frac{1}{2}$ the length of the corolla; lobes 4—5, imbricate, often ciliate, punctate or glandular. *Stamens* 4—5, longer or shorter than the corolla; filaments evident, inserted near the base of the corolla, sometimes connate; anthers often longer than the filaments. *Ovary* ovoid or ellipsoid, glabrous; style cylindric, sometimes as long as the corolla; stigma large, disciform or with incised margins. *Fruit* fleshy, globose, 1-seeded. *Seed* globose; embryo straight; endosperm horny.

Trees or shrubs; leaves alternate, very often serrate or crenate; inflorescence usually a small axillary tuft, sometimes flowers solitary and axillary; flowers small.

Species about 20, natives of China, India, Africa; 1 species in South Africa, widely distributed. (Type: *M. africana* Linn.)

6314 4. RAPANEA Aubl., Hist. Pl. Guiane Franc., vol. 1, p. 121, t. 46 (1775)

Flowers bisexual, sometimes unisexual. *Calyx* 4—5-partite, sometimes almost free, very often punctate, imbricate, or valvate. *Petals* longer than the calyx, sometimes almost free; segments or petals oblong or ovate,

sometimes glandular-ciliate, spreading or recurved, rarely erect. *Stamens* included, inserted in the throat of the corolla; anthers sessile or subsessile, large, oblong. *Ovary* globose; style thick, terete, shorter than the corolla, sometimes absent; stigma thick, ovoid or discoid and sessile. *Fruit* dry or fleshy, 1-seeded. *Seed* globose; embryo straight; cotyledons flat, endosperm horny.

Trees or shrubs; leaves alternate, often sessile, sometimes oblanceolate, entire, rarely toothed, often with lepidote scales; flowers small, in clusters on the branches or in the axils of the leaves.

Species about 150, found in most tropical countries; 2 species in South Africa, extending from the north-eastern Transvaal, Swaziland, Zululand, and Natal, to the south-western districts of the Cape Province; also recorded from the Queenstown district. (Type: *R. guianensis* Aubl.)

148. PRIMULACEAE

Flowers bisexual, often dimorphic, often heterostylis, regular, very rarely zygomorphic. *Calyx* usually 5-fid or -partite, rarely 4—7, persistent, often somewhat leafy. *Corolla-tube* short or elongated, sometimes almost absent; lobes or segments 5, more rarely 4—7, imbricate, entire or emarginate. *Stamens* as many as the corolla-segments and opposite to them, exserted or included, free or more rarely connate; filaments sometimes bearded; anthers 2-theous; staminodes rarely present but, if so, then alternating with the stamens. *Ovary* superior, rarely semi-inferior, 1-chambered, with few or many ovules on a free-central basal sessile or stalked placenta; style terminal; stigma undivided. *Fruit* a capsule, variously dehiscent, few- or many-seeded. *Seeds* normally angular, sometimes with narrow wings; embryo straight, cylindric; endosperm copious.

Perennial or annual herbs, rarely shrubby; leaves radical, alternate, opposite, or whorled, simple or lobed; stipules 0; inflorescence a raceme, spike, panicle, or umbel, or flowers axillary and solitary.

Genera 22, species about 550, mostly in the temperate regions of the northern hemisphere, rare in the southern hemisphere and in the tropics.

- | | | |
|--|----------------------------|---|
| 1. Stamines present; ovary $\frac{1}{2}$ -inferior | 1. <i>Samolus</i> Linn. | |
| Stamines absent; ovary superior ... | ... .. | 2 |
| 2. Inflorescence a raceme or panicle; filaments glabrous | 2. <i>Lysimachia</i> Linn. | |
| Flowers axillary and solitary; filaments bearded | 3. <i>Anagallis</i> Linn. | |

6328

1. SAMOLUS Linn., Sp. Pl., ed. 1, p. 171 (1753)

Calyx persistent; tube shallowly campanulate; lobes 5, slightly longer than the tube, ovate. *Corolla* longer than the calyx; tube subcampanulate; lobes 5, longer than the tube, oblong or elliptic. *Stamens* included, inserted on the corolla-tube or in the throat of the corolla; filaments subulate; anthers as long as or longer than the filaments, oblong or elliptic, sometimes with an apical appendage; staminodes alternating with the stamens. *Ovary* $\frac{1}{2}$ -superior, globose; style shorter or as long as the ovary, cylindric; persistent; stigma obtuse or capitate. *Capsule* enclosed in the enlarged calyx, opening by 5 valves; placenta globose or conical. *Seed* brown, 3-angled; testa reticulated; embryo straight, cylindric; endosperm fleshy.

Herbs, sometimes shrubby at the base, frequently found growing in marshy places near the sea; leaves alternate, sometimes in a basal rosette; radical leaves

petioled; cauline leaves entire, diminishing upwards or reduced to scales; inflorescence a terminal raceme or corymb; bracts at the base or middle of the pedicel.

Species about 16, mostly natives of extra-tropical countries of the southern hemisphere; 2 species found in South Africa, extending from the north-eastern Transvaal, through Natal to the south-western districts of the Cape Province and thence to South West Africa; also recorded from Bechuanaland, the Barkly West district, and some of the north-western districts. (Type: *S. valerandi* Linn.)

6330 2. *LYSIMACHIA* Linn., Sp. Pl., ed. 1, p. 146 (1753)

Calyx divided almost to the base; segments 5—6, oblong. *Corolla* longer than the calyx or scarcely longer; tube campanulate or tubular-campanulate; lobes longer than the tube, entire or toothed. *Stamens* exserted or included, inserted on the corolla-tube; filaments terete, sometimes connate at the base; anthers oblong or ovate; staminodes sometimes present and as many as the stamens. *Ovary* superior, globose or ovoid; style cylindric, almost as long as the corolla; stigma faintly 3-lobed. *Capsule* enclosed in the persistent calyx, capped with the persistent calyx, capped with the persistent style, opening by 5 valves at the apex, rarely irregularly dehiscent. *Seed* brown, 3-angled, flat on one face, keeled on the other; embryo straight, cylindric; endosperm copious.

Procumbent or erect herbs; leaves alternate, opposite, or whorled, entire; inflorescence a spicate raceme or a corymbose panicle, sometimes umbellate or head-like; flowers white or yellow, rarely purple or blue.

Species about 230, found chiefly in Europe, Asia, and America; 3 species in South Africa, recorded from the Transvaal, Natal, and from the Albany, Uitenhage, and Humansdorp districts. (Type: *L. vulgaris* Linn.)

6338 3. *ANAGALLIS* Linn., Sp. Pl., ed. 1, p. 148 (1753)

Calyx 5-partite almost to the base; segments lanceolate or subulate, often acuminate, spreading. *Corolla* slightly longer or evidently longer than the calyx, 5-partite almost to the base; segments obovate or linear, entire or erose. *Stamens* inserted at the base of the corolla and shorter than it; filaments linear, usually bearded, sometimes with beaded hairs; anthers oblong. *Ovary* superior, globose; style terete, almost as long as the stamens or longer; stigma simple. *Capsule* enclosed in the persistent calyx and capped with the persistent style, circumscissile. *Seed* brown, ellipsoid, with 3 narrow wings or with a circular wing forming a concave face and deeply keeled on the other face; embryo straight, cylindric; endosperm copious.

Simple or branched creeping or erect herbs; leaves opposite or alternate, rarely 3-nate, sessile or shortly petioled, entire; flowers red, blue, or white, usually axillary and solitary, on long pedicels, sometimes flowers in a lax raceme.

Species 28, natives of Europe, Asia, Africa, and America; 3, perhaps 4, species in South Africa, extending from the Transvaal, Natal, through the coastal belt to the south-western districts of the Cape Province. (Type: *A. arvensis* Linn.)

149. PLUMBAGINACEAE

Flowers regular, bisexual. *Calyx* 5—10—15-ribbed, and hyaline between the ribs; tube cylindric or tubular, rarely campanulate, sometimes with stalked glands; teeth or lobes 5, introrsely or extrorsely rolled in the bud, spreading in open flowers. *Petals* 5, connate at the very base only or into a tube longer or shorter than the calyx, imbricate. *Stamens* 5, hypogynous or adnate to the base of the petals or to the base of the corolla-tube, opposite the petals or corolla-lobes; filaments filiform or linear; anthers ovate or

oblong, dorsifixed, 2-theous, opening by parallel slits. *Ovary* superior, sessile or stalked, 1-chambered, often 5-angled above, with a solitary pendulous ovule from an erect basal funicle; styles 5, distinct, or more or less connate; stigmas capitate or linear. *Fruit* usually enclosed in the calyx, opening by an operculum or circumscissile near the base or 5-valved, sometimes indehiscent. *Seed* filling the loculus; testa membranous; endosperm floury, copious, scanty, or 0; embryo straight, terete or slightly compressed.

Acaulescent herbs or with a short stem and leaves in a rosette, sometimes suffrutescent, more rarely herbs or shrubs with elongated branched stems and alternate leaves which leave annular scars on falling off; stipules 0; scape or peduncle terminal, dichotomously branched, more rarely simple; inflorescence spicate, often secund, rarely a head or flowers solitary; flowers rose, violet, blue, or yellow, rarely white, sessile or on a short pedicel; bracts usually rigid, scarious at the edge, 1 subtending each spikelet; bracteoles 1 or more to each flower.

Genera 10; species about 300, mostly in maritime and desert places, especially in the Mediterranean region; a few cosmopolitan.

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|--|---------------------------------|---|
| 1. Calyx glandular with stalked glands... | 1. <i>Plumbago</i> Linn. | |
| Calyx scarious or papery | | 2 |
| 2. Calyx membranous, appearing winged; style divided into 5 arms above | 2. <i>Dyerophytum</i> O. Kuntze | |
| Calyx scarious; tube almost truncate; styles 5, free | 3. <i>Limonium</i> Mill. | |

6343 1. PLUMBAGO Linn., Sp. Pl., ed. 1, p. 151 (1753)

Calyx tubular, 5-ribbed, hyaline between the ribs, covered with stalked glands; teeth 5, very much shorter than the tube, erect. *Corolla-tube* long-cylindric, much longer than the calyx; lobes 5, spreading, much shorter than the tube, obovate, equal or nearly so. *Stamens* arising from the base of the corolla, reaching the throat of the corolla; filaments filiform, fleshy, dilated and connate at the base; anthers linear, sagittate at the base. *Ovary* slightly tapering upwards; style terminal, filiform, reaching the throat of the corolla-tube, with 5 linear branches stigmatic along their inner surfaces. *Capsule* membranous, circumscissile near the base, with the deciduous part often splitting into 5 valves from below.

Perennial, rarely annual, herbs or shrubs, sometimes climbing; leaves alternate, eared at the base of the petiole or the petiole amplexicaul; inflorescence a spike; flowers blue, rose, violet, or white; bracts 3, at the base of the flower.

Species about 10, found in the warmer regions of both hemispheres; 3 species in South Africa, recorded from the Transvaal, Natal, to the Riversdale district; also recorded from the Somerset East and Queenstown districts and South West Africa. (Type: *P. europaea* Linn.)

6345 2. DYEROPHYTUM O. Kuntze, Rev. Gen. Pl., pt. 2, p. 394 (1891) (*Vogelia* Lam. non Med. of the Fl. Cap.)

Calyx membranous; 5-partite almost to the base, strongly 5-ribbed, appearing winged owing to the out-turned margins of the segments, strongly wrinkled, persistent. *Corolla* longer than the calyx; tube cylindric below, gradually widening upwards; lobes shorter than the tube, obovate, entire, bifid, or trifid. *Stamens* arising from the base of the corolla-tube and scarcely as long as the tube; filaments filiform; anthers oblong. *Ovary* more or less 5-angled; style terminal, about as long as the corolla-tube, with 5 linear arms stigmatose on the inner side. *Capsule* circumscissile at the base and splitting upwards.

More or less scaly shrubs or undershrubs; leaves alternate, spatulate or obcordate, entire; inflorescence a dense terminal spike; bracts and bracteoles small.

Species 3, natives of Africa, India, and the Island of Socotra; 1 species in South Africa, recorded from Little Namaqualand, South West Africa, and the Prieska and Calvinia districts. (Type: *D. africanum* (Lam.) O. Kuntze=*Vogelia africana* Lam.)

6351a 3. LIMONIUM Mill., Gard. Dict. Abridg., ed. 4 (1754)

(*Statice* Willd. of the Fl. Cap.)

Calyx often scarious; tube tubular below, widened or salver-shaped above, almost truncate, 5-ribbed and hyaline between the ribs. *Corolla* longer or shorter than the calyx, sometimes segments free almost to the base; tube tubular below, widening above; lobes shorter than the tube, oblong, bifid at the apex. *Stamens* included or exserted, fixed to the corolla-tube at the base or near base of corolla-segments; filaments linear; anthers oblong. *Ovary* 5-angled, with an apical projection into the ovary-chamber; styles free, longer or shorter than the corolla, slightly capitate at the apex.

Perennial, rarely annual, stemless herbs or small shrubs branched from the base, pulverulent or lepidote; leaves alternate, radical or cauline, flat, linear, obovate, ericoid, or needle-like; inflorescence a raceme, cyme, or panicle; peduncles terete or winged; bracts enwrapping 1 or more flowers; usually scarious at the tips and on the margins.

Species over 100, found chiefly in the coastal and desert regions of the northern hemisphere, some in Australia and Africa; 15 species recorded from South Africa, mostly in the coastal belt from Namaqualand to the Kentani district; also in South West Africa.

150. SAPOTACEAE

Flowers bisexual, regular. *Calyx* often somewhat leathery, 4—8-partite, often hairy. *Corolla* with a short tube, 4—8-lobed or in 2 series and 18—24-partite; lobes imbricate. *Stamens* inserted on the corolla, as many as the corolla-lobes and opposite to them, or more numerous and 2-seriate; anthers 2-theous, usually extrorse, sometimes with alternating staminodes. *Ovary* superior, 4—9-chambered, with a single ascending ovule in each chamber; style simple, conical or cylindric; stigma simple, acute, obtuse, or capitate. *Fruit* a 1- or many-locular berry. *Seeds* often solitary; testa hard; cotyledons thick and fleshy or thin and foliaceous; endosperm present or none.

Trees or shrubs with milky juice; leaves leathery, simple, alternate, entire; stipules 0; flowers in axillary clusters or arising on the bare branches.

Genera 18 with about 400 species, common in the tropics.

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|--|-----|-----|-------------------------------|---|
| 1. Corolla 18—24-partite | ... | ... | 3. <i>Mimusops</i> Linn. | |
| Corolla 5—7-lobed | ... | ... | ... | 2 |
| 2. Stamines alternating with the stamens | | | 1. <i>Sideroxylon</i> Linn. | |
| Staminodes absent | ... | ... | 2. <i>Chrysophyllum</i> Linn. | |

6368 1. SIDEROXYLON Linn., Sp. Pl., ed. 1, p. 192 (1753)

Calyx 5-partite, forming a basin-shaped structure, persistent; lobes ovate, imbricate. *Corolla* slightly longer than the calyx, divided nearly or almost to the base; lobes 5, usually spreading, ovate, concave, imbricate. *Stamens* 5, slightly exceeding the corolla, inserted on the corolla-tube and opposite the corolla-lobes; filaments linear; anthers shorter than the filaments, oblong; staminodes 5, petaloid, alternating with the stamens. *Ovary* hairy, 4—5-chambered; style about as long as the ovary, cylindric, truncate.

Fruit a berry, black when ripe, about the size of a large pea, 1—3-seeded. *Seed* brown, with a hard testa; cotyledons thick, fleshy; endosperm 0.

Trees or shrubs, with milky juice; leaves often leathery, alternate, often obovate or elliptic, often nerved; flowers white, pedicellate, in axillary tufts.

Species about 262, found almost throughout the tropics and subtropics; 2 species in South Africa, extending from the Transvaal, Swaziland, Zululand, and Natal, to the south-western districts of the Cape Province. (Type: *S. inerme* Linn.)

NOTE.—The flowers are sometimes 6-merous.—E. P. P.

6377 2. CHRYSOPHYLLUM Linn., Sp. Pl., ed. 1, p. 192 (1753)

Calyx somewhat leathery, usually hairy; segments 5—6, unequal, ovate, imbricate. *Corolla* somewhat leathery, scarcely longer than the calyx-tube subcampanulate; lobes 5—6, ovate, imbricate. *Stamens* about as long as the corolla, as many as the corolla-lobes and opposite to them, inserted in the throat of the corolla-tube; filaments linear or subterete; anthers about equalling the filaments in length, lanceolate or ovate, sometimes sagittate at the base, sometimes shortly apiculate; staminodes 0. *Ovary* 5—9-chambered, sometimes gradually merging into the style; style about as long or shorter than the ovary, thick; stigma simple, obtuse, rarely acute. *Fruit* a 1- to few-locular berry, with 1 to few seeds, about the size of a small cherry. *Seeds* with a hard testa; cotyledons large and fleshy; endosperm 0.

Trees or shrubs; leaves alternate, often lanceolate or obovate, sometimes acuminate, often silky beneath, often transversely multistriate; flowers white, yellow, or green, axillary or arising on the naked branches, sessile or pedicelled, usually in tufts.

Species about 211, occurring in the tropics of both hemispheres; 3 species in South Africa, found in the Transvaal and Natal. (Type: *C. cainito* Linn.)

6386 3. MIMUSOPS Linn., Syst., ed. 10, p. 1000 (1759)

Calyx somewhat leathery, hairy; segments 6—8, biseriate, lanceolate. *Corolla* scarcely as long as the calyx; tube broadly tubular; segments 18—24, biseriate; the outer row consisting of 12—16 linear spreading lobes two of which are opposite each calyx-segment; the inner row of 6—8 linear or spathulate lobes one of which is opposite each calyx-segment. *Stamens* shorter than the corolla; as many as the calyx-segments, opposite the inner corolla-lobes, fixed on the corolla-tube; filaments shorter than the anthers, linear, sometimes broadening below; anthers lanceolate or ovate, sometimes acuminate, sometimes with an appendage which is minutely 2—3-toothed, sometimes spurred at the base; staminodes alternating with the stamens, oblong, linear-lanceolate, sometimes small fleshy structures, sometimes acuminate, entire or 2-fid, hairy. *Ovary* 6—8-chambered, hairy; style usually tough, flat, cylindric, or conical, longer or shorter than the calyx; stigma simple. *Fruit* a 1—2-locular berry, often ellipsoid, about the size of a small cherry. *Seeds* 1—2, often elliptic in outline; testa usually smooth and shining; cotyledons thin, elliptic; endosperm horny or fleshy.

Trees or shrubs with milky juice; leaves mostly leathery, alternate, petioled, obovate, elliptic or lanceolate; flowers white, often fragrant, pedicelled, mostly in axillary tufts.

A tropical genus of about 180 species; 12 species in South Africa, extending from the Transvaal, Zululand, and Natal, and the eastern districts to the Alexandria district. (Type: *M. elengi* L.)

NOTE.—J. Gerstner in *Journ. S. Afr. Bot.*, vol. 12, p. 48 (1946), and vol. 14, p. 171 (1948), has proposed placing *M. discolor* Hartog in the genus *Labourdonnaisia* Boj. and the other species of *Mimusops* in the genus *Marilkara* Adams. The general pattern of the flowers in all the specimens I have examined is uniform, in so far as the relationship between the number of sepals, petals and stamens is concerned. In some the stamens are reduced to staminodes, which I do not consider justification for separating the South African plants from the genus *Mimusops* Linn.—E. P. P.

151. EBENACEAE

Plants usually dioecious. *Flowers* regular, 3—8-merous, sometimes bisexual, rarely unisexual with occasional bisexual flowers. *Calyx* usually divided almost to the base, more rarely with a distinct tube which is truncate or shortly toothed, persistent and often more or less accrescent in fruit. *Corolla* with a usually short tube, with the lobes sinistrorsely contorted in bud, deciduous. *Stamens* 3 or more, inserted at the base of the corolla or on the corolla-tube, sometimes hypogynous, usually in 1—2 rows, usually included; anthers often linear or linear-lanceolate, usually much longer than the filaments, glabrous or hairy; staminodes usually present in the female flowers. *Disc* present or absent. *Ovary* superior, 2—16-chambered, with 1—2 pendulous ovules in each chamber; style simple or more or less lobed, or styles free. *Fruit* a berry, sometimes coriaceous, with 1 to more seeds. *Seeds* globose or ellipsoid; embryo straight; cotyledons thin and leafy; endosperm usually copious and bony.

Trees or shrubs, in a few species climbing; leaves normally alternate, often coriaceous, entire; stipules 0; inflorescence an axillary cyme, raceme, or panicle, or flowers solitary; bracts usually present.

Genera 6, with about 350 species, distributed over the warmer regions of the world.

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| 1. Flowers 3-merous; calyx cup-shaped, truncate; ovules 2 in each ovary-chamber | 3. Maba J. R. & G. Forster | |
| Flowers 4—8-merous; calyx divided almost to the base; ovules solitary in each ovary-chamber | | 2 |
| 2. Flowers normally bisexual and solitary; style shortly or deeply divided into 2—6 lobes | 1. Royena Linn. | |
| Flowers normally unisexual, arranged in an axillary raceme, panicle, or cyme; styles usually free to the base | | 3 |
| 3. Inflorescence an axillary raceme or panicle | 2. Euclea Murr. | |
| Inflorescence an axillary cyme | 4. Diospyros Linn. | |

6403

1. ROYENA Linn., Sp. Pl., ed. 1, p. 397 (1753)

Flowers usually bisexual, more rarely unisexual. *Calyx* usually divided almost to the base, more rarely with a large more or less inflated tube, often somewhat accrescent in fruit, usually hairy; lobes usually 5, ovate, sometimes acuminate. *Corolla* scarcely longer or much longer than the calyx, often hairy, sometimes glandular; tube subcampanulate or subglobose; lobes 5, longer or shorter than the tube, broadly elliptic, oblong-ovate, or ovate. *Disc* sometimes surrounding the base of the ovary. *Stamens* 5—14, in most species 10 inserted in 1 row, included; filaments shortly oblong; anthers sometimes almost sessile, usually linear-lanceolate, hairy; in male flowers staminodes on a disc and surround the ovary; staminodes sometimes hairy. *Ovary* 2—10-chambered, with a solitary ovule in each chamber, hairy; style sometimes more or less conical, shortly or somewhat deeply divided into 2—6 lobes; stigma simple. *Fruit* 1—5-locular, sometimes more or less fleshy when ripe, 1 or more seeded, sometimes enclosed in the enlarged calyx, sometimes villous. *Seed* usually spherical or ellipsoid; embryo extending almost the length of the seed but small in relation to the size of the seed; endosperm horny.

Shrubs or small trees; leaves more or less coriaceous, normally alternate, rarely opposite, often elliptic, lanceolate, linear, linear-lanceolate, or oblanceolate sometimes small, sometimes hairy; flowers normally solitary.

An African genus of about 29 species; 18 species in South Africa, widely distributed. (Type: *R. lucida* Linn.)

NOTE.—The limits of the South African species are as yet badly defined and the genus needs revision.—E. P. P.

6404 2. EUCLEA Murr., Syst. Veg., ed. 13, p. 747 (1774)

Plants usually dioecious, rarely with occasional bisexual flowers. *Calyx* usually hairy, divided almost to the base; lobes usually 5, more rarely 4, usually ovate. *Corolla-tube* campanulate, urceolate, subglobose; lobes 5, longer or shorter than the tube, ovate, broadly elliptic, or oblong. *Male flowers*:—*Stamens* included, in the male flowers 10–30; filaments short, linear; anthers longer than the filaments, oblong or linear-lanceolate, usually glabrous. *Ovary* abortive; styles 2 or style 1. *Female flowers*:—*Staminodes* 2–4 or none; *Ovary* usually 4- (rarely 2-) chambered, with a single pendulous ovule in each chamber; styles 2 or style 1 and deeply bifid, rarely styles 3; stigmas emarginate or bifid. *Fruit* usually spherical, 1-locular, 1-seeded. *Seed* black; testa smooth or pustulate; embryo straight; cotyledons flat; endosperm horny.

Shrubs or small trees; leaves coriaceous, alternate, rarely verticillate, elliptic, lanceolate, oblong, obovate, or linear, entire, usually with undulate margins; inflorescence an axillary raceme or panicle.

An African genus of about 38 species; 1 species in Arabia, 17 species in South Africa, widely distributed. (Type: *E. racemosa* Murr.)

6405 3. MABA J. R. & G. Forster, Charact. Gen. Pl., p. 121, t. 61 (1776)

Plants dioecious, very rarely monoecious, rarely flowers polygamous. *Calyx* usually 3-fid, sometimes 4–6-fid, rarely truncate and entire. *Corolla* exceeding the calyx; tube campanulate or tubular; lobes usually 3, longer than the tube, sinistrorsely contorted in bud as seen from above. *Male flowers*:—*Stamens* 3 to many, usually 9, inserted near the base of the corolla or hypogynous, free or variously united; anthers oblong or lanceolate-linear. *Ovary* rudimentary. *Female flowers*:—*Staminodes* many or none, glabrous or hairy. *Ovary* 3–6-chambered, with a solitary ovule in the 6-chambered ovaries or 2 ovules in the 3-chambered ovaries, glabrous or hairy; styles 3 or style 3-lobed. *Fruit* usually globose or ovoid, with the persistent calyx spreading or cupuliform, glabrous or hairy. *Seed* sometimes with a ruminated endosperm.

Trees or shrubs; leaves alternate, entire; inflorescence an axillary cyme or sometimes lateral on the older branches, or flowers solitary.

Species over 70, found in almost all tropical and subtropical countries; 1 species occurs in South Africa, extending from Natal to the East London district. (Type: *M. elliptica* J. R. & G. Forst.)

6406 4. DIOSPYROS Linn., Sp. Pl., ed. 1, p. 1057 (1753)

Plants usually dioecious. *Calyx* usually 4–5-fid, sometimes 3–7-lobed, rarely truncate or obscurely lobed. *Corolla-tube* urceolate, campanulate, or tubular, usually hairy; lobes usually 4–5, more rarely 3–7, spreading or erect, usually obtuse, sinistrorsely contorted in bud when seen from above. *Male flowers*:—*Stamens* 4 to many, usually about 16, free or more or less united, inserted at the base of the corolla, rarely about the middle of the corolla-tube, sometimes hypogynous, glabrous or hairy; filaments slender, sometimes almost obsolete; anthers longer than the filaments, linear or lanceolate, often apiculate. *Ovary* rudimentary or absent. *Female flowers*:—*Staminodes* usually present. *Ovary* 4–15-chambered, usually 8-chambered, with a solitary ovule in each chamber, glabrous or hairy; styles 1–4 or

obsolete; stigma emarginate or punctiform. *Fruit* usually globose, conical or ellipsoid, with 1—10 seeds. *Seeds* brown, oblong in outline; embryo straight; cotyledons thin, flat; endosperm bony.

Trees or shrubs; leaves alternate, rarely opposite, entire; inflorescence an axillary cyme, sometimes flowers solitary.

Species over 200, found in almost all tropical, subtropical, and temperate countries; 1 species recorded from the Transvaal and the Bechuanaland Protectorate. (Type: *D. lotus* Linn.)

152. OLEACEAE

Plants rarely dioecious. *Flowers* normally bisexual, rarely unisexual or unisexual with occasional bisexual flowers. *Calyx* often campanulate, 4-toothed or -lobed, rarely more, sometimes truncate, rarely absent. *Corolla* gamopetalous, 4 to many-lobed, rarely polypetalous or absent. *Stamens* 2, rarely 4, inserted on the corolla-tube and alternating with the carpels; anthers often large in relation to the size of the flower, 2-theous, often apiculate, opening lengthwise. *Disc* 0. *Ovary* superior, 2-chambered, usually with 2 ovules in each chamber, rarely with 1 or 4—8 ovules; style simple; stigma capitate, flattened or club-shaped, often bifid. *Fruit* a 2-valved loculicidal capsule or a berry or drupe. *Seeds* 2—4, often solitary by abortion; endosperm usually present.

Trees or shrubs, sometimes climbing; leaves normally opposite, rarely alternate, simple or compound, rarely undeveloped; stipules 0; inflorescence a cyme, panicle or raceme, sometimes flowers fascicled or solitary.

Genera about 20; species about 300, found throughout the hot and temperate regions of the world.

- | | |
|---|-----------------------------------|
| 1. Corolla-lobes covered with swollen hairs on the inner face | |
| | 1. <i>Schrebera</i> Roxb. |
| Corolla-lobes without swollen hairs | 2 |
| 2. Corolla-tube long-cylindric | 4. <i>Jasminum</i> Linn. |
| Corolla-tube scarcely exceeding the calyx | 3 |
| 3. Fruit a drupe | 2. <i>Olea</i> Linn. |
| Fruit a membranous capsule... .. | 3. <i>Menodora</i> Humb. & Bonpl. |

6422 1. SCHREBERA Roxb., Pl. Coromand., vol. 2, p. 1, t. 101 (1798)

Flowers bisexual. *Calyx* campanulate, 4—8-toothed, sometimes 2-lobed or subtruncate. *Corolla* salver-shaped; tube cylindric; lobes 6—8, shorter than the tube, elliptic or obovate, more or less densely clothed with short swollen hairs on the inner face, imbricate. *Stamens* 2, rarely 4, included or shortly exerted, inserted near the mouth of the corolla-tube; filaments thick, fleshy; anthers large, oblong or obovate, about as long as the filaments. *Ovary* 2-chambered, with 3 or 4 pendulous ovules in each chamber; sometimes hairy; style shorter than the corolla-tube, cylindric; stigma elliptic in outline, thick, fleshy. *Capsule* woody, obovoid or club-shaped, separating into 2 boat-like valves. *Seeds* usually 4 in each loculus, pendulous, compressed, winged at the apex; embryo straight; cotyledons flat, elliptic; endosperm scanty.

Trees or climbing shrubs; leaves opposite, simple or imparipinnate, with the rachis sometimes shortly winged; inflorescence a terminal di- or tri-chotomous panicle.

Species 4, natives of Africa and India; 3 species in South Africa, extending from the northern Transvaal, Swaziland, and Natal to Pondoland. (Type: *S. swietenoides* Roxb.)

6434

2. *OLEA* Linn., Sp. Pl., ed. 1, p. 8 (1753)

Plants sometimes dioecious. *Flowers* usually bisexual, more rarely unisexual with occasional bisexual flowers. *Calyx* usually somewhat leathery, usually divided almost to the base, rarely cup-shaped and subtruncate; segments 4, ovate; calyx sometimes with 8 teeth. *Corolla* somewhat fleshy; tube very short; lobes 4, much longer than the tube, oblong, often with inflexed margins, induplicate-valvate, rarely lobes absent. *Stamens* 2, rarely 4, attached to the tube of the corolla; filaments flat and oblong, sometimes linear; anthers large in relation to the size of the flower, longer than the filaments, oblong or suborbicular, sometimes 2-toothed or 2-lobed at the apex, with extrorse dehiscence. *Ovary* 2-chambered, with 2 lateral or subpendulous ovules in each chamber; style often absent; stigma fleshy, ovoid or subglobose. *Drupe* varying in size from that of a small pea to a large cherry, ovoid, ellipsoid, or globose; endocarp bony or crustaceous. *Seed* usually solitary, pendulous; embryo straight; cotyledons thin and leaf-like or thick and convex on the back and flat on the face; endosperm copious, scanty or none.

Trees or shrubs; leaves usually leathery, simple, opposite, elliptic, lanceolate, linear-lanceolate, or obovate, sometimes apiculate or acuminate, usually entire, sometimes paler beneath; inflorescence a trichotomous and fascicled axillary panicle, rarely a terminal panicle; flowers often fragrant.

Species about 81, natives of central or tropical Asia, the Mediterranean region, tropical Africa, the Mascarene Islands, and New Zealand; 8 species found in South Africa, extending from the Transvaal and Natal through the coastal districts to the Cape; found also in several of the central districts and in South West Africa. (Type: *O. europaea* Linn.)

6438

3. *MENODORA* Humb. & Bonpl., Pl. Aequin., vol. 2, p. 98, t. 110 (1809)

Flowers bisexual. *Calyx* sometimes scabrid; tube campanulate; lobes 5—15, longer than the tube, linear, sometimes each lobe deeply 3-partite. *Corolla* longer than the calyx; tube funnel-shaped, often hairy within; lobes 5—6, longer than the tube; oblong-elliptic or elliptic, imbricate. *Stamens* 2, included, attached to the corolla-tube; filaments linear; anthers oblong. *Ovary* 2-chambered, with 4, rarely 2, ovules in each chamber which are laterally fixed near the base; style cylindric, somewhat shorter than the corolla; stigma capitate or shortly 2-lobed. *Capsule* membranous, didymous, splitting across. *Seeds* usually 8 or fewer by abortion, sometimes obovate in outline and with a narrow marginal wing; embryo straight; cotyledons flat, elliptic; endosperm 0.

Herbs or shrubs, sometimes with short stems from an underground woody rootstock, or with leafless stems; leaves opposite or alternate, entire, toothed, or pinnately lobed, sometimes undeveloped or rudimentary; inflorescence a dichotomous panicle or a simple axillary raceme or the flowers solitary and terminal.

Species about 24, chiefly natives of North and South America; 3 species found in South Africa recorded from the Transvaal, Natal, Bechuanaland, Griqualand West, the Orange Free State, and Namaqualand. (Type: *M. helianthemoides* Humb. & Bonpl.)

6440

4. *JASMINUM* Linn., Sp. Pl., ed. 1, p. 7 (1753)

Flowers bisexual. *Calyx-tube* campanulate; lobes or teeth 4—10, as long as or longer or shorter than the tube, linear or somewhat ovate. *Corolla*

much longer than the calyx; tube cylindric; lobes 4—12 or more, shorter than the tube, linear, oblong, or elliptic, sometimes acuminate. *Stamens* 2, included, inserted in the upper part of the corolla-tube; anthers longer than the filaments, sometimes subsessile, linear or oblong, apiculate or acute, with lateral dehiscence. *Ovary* 2-chambered, with 2, rarely 3—4, ovules in each chamber which are attached near the base of the chambers; style about as long as or shorter than the corolla-tube, cylindric or flattened; stigma flat, oblong, obovate-oblong, linear-lanceolate, sometimes club-shaped. *Fruit* a twin berry. *Seed* often solitary, erect.

Shrubs, mostly climbers; leaves opposite, rarely alternate, usually petioled, trifoliate or imparipinnate or reduced to 1 leaflet; inflorescence a few- or many-flowered cyme; flowers yellow or white, usually sweetly scented.

Species about 448, natives of Asia, Africa, and Australia, with a few in southern Europe; 14 species in South Africa, mostly in the coastal districts from Zululand and Natal to the Van Rhynsdorp district; also recorded from the Transvaal, Ngamiland, and Bechuanaland. (Type: *J. officinale* Linn.)

NOTE.—An occasional flower with a 3-chambered ovary was seen.—E. P. P.

153. SALVADORACEAE

Plants sometimes dioecious. *Flowers* regular, bisexual or unisexual. *Calyx* campanulate, ovoid, or saucer-shaped, 2-partite or shortly 4-fid. *Corolla* with a short tube and 4-lobed or of 4 free petals; lobes or petals imbricate or valvate in bud. *Stamens* 4, inserted on the corolla-tube and alternating with the lobes or hypogynous; filaments free or connate at the base; anthers 2-theous. *Disc* of glands or scales or 0. *Ovary* superior, 1—2-chambered, with 1—2 basal or apical ovules in each chamber; stigma usually sessile, entire or bifid. *Seed* with a straight embryo; cotyledons thin or thick; endosperm 0.

Trees or shrubs, unarmed or spiny; leaves usually leathery, opposite, simple, entire; stipules rudimentary; inflorescence an axillary panicle, often reduced to sessile fascicles.

Genera 3; species about 10, found in tropical and subtropical Asia, Africa, and the Mascarene Islands.

Petals free; ovary 2-chambered ... 1. *Azima* Lam.

Petals united at the base; ovary 1-chambered 2. *Salvadora* Linn.

6444 1. AZIMA Lam., Encycl., vol. 1, p. 343 (1783)

(*Monetia* L'Her. of the Fl. Cap.)

Plants dioecious. *Male flowers*.—*Calyx* campanulate, 2-partite or shortly 4-fid. *Corolla* divided to the base; petals 4, lanceolate. *Stamens* 4, slightly exerted; filaments linear; anthers about as long as the filaments, oblong. *Ovary* rudimentary. *Female flowers*.—*Calyx* and *corolla* very similar as in the male flowers. *Staminodes* 4, alternating with the petals; rudimentary anthers sagittate at the base. *Ovary* ovoid, 2-chambered, with 1—2 basal ovules in each chamber; style 0; stigma sessile, 2-lobed, villous. *Fruit* a berry, about the size of a pea, 1—2-seeded. *Seeds* brownish; embryo straight; cotyledons flat, elliptic; endosperm 0.

Glabrous shrubs, much-branched or sarmentose, with axillary spines in pairs or solitary; leaves leathery, opposite, entire; inflorescence a short dense panicle or flowers axillary; flowers small.

Species about 6, natives of Madagascar, Africa, the Philippine Islands, eastern India, and the Malay Archipelago; 2 species in South Africa, extending from the Transvaal, Swaziland, Zululand, and Natal to the Riversdale district; also recorded from South West Africa. (Type: *A. tetraacantha* Lam.)

NOTE.—In the *Flora Capensis*, vol. 1, p. 474, Sonder in the generic description under *Monetia* L'Hér. refers to the ovules as solitary in the ovary-chambers; Baker (*Flora Tropical Africa*, vol. 4, p. 22) states ovules 1—2 in each ovary-chamber. In all the flowers I dissected I found the ovules to be solitary; occasionally there are 3 ovary-chambers but 1 is empty.—E. P. P.

6446

2. SALVADORA Linn., Sp. Pl., ed. 1, p. 122 (1753)

Flowers bisexual. *Calyx* saucer-shaped, 4-fid; lobes ovate. *Corolla* slightly longer than the calyx; tube short, saucer-shaped; lobes 4, slightly longer than the tube, elliptic, reflexed, imbricate. *Stamens* 4, slightly exserted, fixed to the base or middle of the corolla-tube; filaments linear; anthers shorter than the filaments, oblong. *Disc* of 4 glands or scales alternating with the filaments or none. *Ovary* 1-chambered, with a single apical ovule; style usually 0; stigma truncate, subglobose, or nearly peltate. *Fruit* a drupe. *Seed* with a straight embryo; cotyledons thick, plano-convex; endosperm 0.

Shrubs or trees; leaves leathery, opposite, simple, elliptic, oblong-elliptic, or oblanceolate, entire; inflorescence an axillary panicle; flowers small, sessile or pedicellate.

Species about 3, natives of Africa, eastern India, and China; 2 species in South Africa, recorded from the Transvaal, Zululand, and South West Africa. (Type: *S. persica* Linn.)

154. LOGANIACEAE

Flowers bisexual, regular or slightly oblique. *Calyx* 4-lobed; tube short or long in relation to the lobes. *Corolla* variously shaped; lobes usually 4, occasionally 5, rarely 8—16, longer or shorter than the tube. *Stamens* as many as and alternating with the corolla-lobes, inserted in the corolla-throat or deeper on the corolla-tube, included or exserted; filaments free, filiform or sometimes almost obsolete; anthers sometimes subsessile, longer or shorter than the filaments, 2-theous. *Disc* usually absent. *Ovary* superior, 2-chambered, rarely 4-chambered by the development of placental dissepiments, rarely 1-chambered by the absorption of the dissepiment, with few to many ovules in each chamber; style included or exserted, often terete; stigma small, globose, or club-shaped, often faintly 2-lobed. *Fruit* a septicidal 2-valved capsule or a berry. *Seeds* obovoid, ellipsoid, or globose, sometimes angular or flattened by pressure; embryo straight; endosperm present.

Shrubs or trees; leaves opposite, less often whorled, rarely fascicled, simple, entire or toothed or lobed, sometimes rugose; stipules usually reduced to an interpetiolar line, occasionally distinct; inflorescence a cyme, often massed in a panicle, rarely a raceme.

Genera about 30, with about 400 species, mainly tropical.

- | | | |
|--|------------------------|---|
| 1. Corolla-lobes 8—16 | 2. Anthocleista Afzel. | |
| Corolla-lobes 4—5 | ... | 2 |
| 2. Fruit a berry | 1. Strychnos Linn. | |
| Fruit a capsule | ... | 3 |
| 3. Calyx-tube densely adpressedly silky hairy within; throat of corolla closed by a dense growth of deflexed hairs | 3. Lachnopylis Hochst. | |
| Calyx-tube and corolla not as above | ... | 4 |

4. Inflorescence a simple or branched raceme 4. *Gomphostigma* Turcz.
 Inflorescence a cyme, often massed in a dense panicle
 5. *Buddleja* Linn.

6460 1. *STRYCHNOS* Linn., Sp. Pl., ed. 1, p. 189 (1753)

Calyx deeply 5- or 4-fid; tube obsolete; lobes ovate, imbricate. *Corolla* longer than the calyx; tube campanulate; lobes 5 or 4, valvate-spreading or reflexed, rarely suberect, sometimes hairy on the inner face. *Stamens* 5 or 4, included, usually adnate to the throat of the corolla, rarely low down in the corolla-tube; filaments subterete; anthers oblong, sometimes longer than the filaments. *Ovary* 2-chambered, rarely 1-chambered by absorption of the dissepiment, with several, rarely many, very rarely few ovules in each chamber; style about as long as the corolla, terete; stigma capitate, sometimes faintly 2-lobed. *Fruit* a globose berry, sometimes as large as an orange, usually 2-locular, sometimes 1-locular, one- or more-seeded; pericarp crustaceous. *Seed* embedded in pulp, variously compressed, sometimes globose or elliptic in outline; embryo straight, small in relation to the size of the seed; cotyledons papery, flat, elliptic; endosperm horny.

Erect trees or shrubs or climbing by hooked tendrils, usually glabrous, armed or unarmed; leaves decussate, petioled, simple, sometimes pungent, entire; stipules represented by an interpetiolar ridge or 0; inflorescence a cyme, simple or in condensed or lax thyrsoid or corymbose panicles, axillary or terminal or flowers in clusters on the branches.

Species about 400, widespread in all tropical and a few subtropical countries; 8 species in South Africa, extending from the Transvaal, Swaziland, Zululand, and Natal to the Humansdorp and Knysna districts; also recorded from Ngamiland and South West Africa. (Type: *S. nux-vomica* Linn.)

NOTE.—An occasional flower is 6-merous.—E. P. P.

6466 2. *ANTHOCLEISTA* Afzel. ex R. Br., in Tuckey, Congo, app. 449 (1818)

Calyx leathery, deeply 4-fid; lobes elliptic or orbicular, imbricate. *Corolla* leathery; tube narrow-campanulate or tubular; lobes 8—16, overlapping to the right, twisted to the left. *Stamens* 8—16, included, adnate to the corolla-tube; filaments flattened below, connate into a membranous ring or filaments not evident; anthers linear, sometimes sessile, sagittate at the base. *Ovary* 2-chambered or by development of placental dissepiments 4-chambered, with many ovules in each chamber; style included, cylindric; stigma oblong-capitate, shortly cylindric, or globose. *Fruit* a globose or ellipsoid 4-locular berry; pericarp leathery. *Seeds* small.

Trees, sometimes up to 80 ft. high, or shrubs, sometimes climbing, armed with axillary spines or unarmed; leaves mostly near the ends of the shoots, large or very large (up to 2½ ft. long), decussate, petioled or sessile, entire; leaf-sheaths auricled or not, united by an interpetiolar ridge or connate laterally into a short sheathing cup; inflorescence a cyme in lax terminal panicles; peduncles thick; flowers sometimes creamy, sweetly scented, on a short stout pedicel; bracts scale-like.

Species about 50, mostly found in tropical Africa and Madagascar; a few in the Mascarene Islands; 1 species recorded from Swaziland.

6469 3. *LACHNOPYLIS* Hochst., in Flora, vol. 26, p. 77 (1843)

(*Nuxia* Lam. of the Fl. Cap.)

Flowers bisexual. *Calyx* coriaceous or thin, papery and brittle, mostly bilabiate, glabrous, hairy, or viscid on the outer surface, densely adpressedly silky hairy within; tube campanulate; lobes 4, with either one lip or both

lips 2-toothed or emarginate. *Corolla-tube* as long as or somewhat shorter than the calyx-tube, cylindric, circumscissile above the persistent base, with the throat closed by a dense growth of deflexed hairs; lobes 4, strongly reflexed over the upper part of the calyx, usually adpressedly silky hairy on the outer face. *Stamens* 4, exserted, inserted in the throat of the corolla-tube; anthers with the thecae confluent at the apices, cordate-reniform. *Ovary* obovoid, 2-chambered, with numerous axile ovules in each chamber, rarely quite glabrous; styles exserted from the corolla-tube; stigma truncate. *Fruit* a 2-valved septicidal capsule, surrounded by the persistent calyx, usually densely adpressedly silky hairy. *Seeds* numerous, small, oblong in outline.

Dwarf or arborescent shrubs or tall trees; leaves usually in whorls of 3, rarely in whorls of 4, more rarely opposite and decussate, subsessile or petioled, simple, entire, very generally glandular-punctate; stipules 0; inflorescence terminal, rarely also axillary, densely many-flowered, with dichasial branching; flowers often sweetly scented, sessile or on long pedicels.

Species about 40, natives of Africa and Madagascar, with 2 species in the Comoro Islands; 15 species in South Africa, extending from the Transvaal and Natal to the George, Knysna, Humansdorp, and Uniondale districts; also recorded from Griqualand West and Bechuanaland. (Type: *L. congesta* (R. Br. ex Fres.) C. A. Sm.)

NOTE.—Paul Jovet in *Bull., d'Hist. Naturelle*, vol. 82, p. 1 (1947) transfers *Lachnopylis* Hochst. back as a section of *Nuxia* Lam.—E. P. P.

6470 **4. GOMPHOSTIGMA** Turcz. in Bull. Soc. Natur. Moscou, vol. 16, p. 53 (1843)

Flowers bisexual, occasionally somewhat irregular. *Calyx-tube* subcampanulate; lobes 4, oblong, imbricate. *Corolla* occasionally 2-lipped; tube campanulate; lobes 4, about as long as the tube, elliptic-oblong, imbricate. *Disc* surrounding base of the ovary cup-like. *Stamens* 4, included, inserted in the throat of the corolla-tube; filaments subterete; anthers oblong, about as long as the filaments. *Ovary* 2-chambered, with many ovules in each chamber; style included, terete; stigma globose, faintly 2-lobed. *Fruit* a capsule, surrounded by the persistent calyx. *Seeds* obovoid or angular.

Branched shrubs or undershrubs, stellately lepidote or tomentose; leaves sessile, decussate or fascicled, linear or elliptic, 1-nerved; stipules represented by a distinct interpetiolar ridge; inflorescence a terminal simple or branched raceme.

Species 2, natives of Africa, both species found in South Africa and widely distributed but apparently absent from the south-eastern and south-western districts of the Cape Province. (Type: *G. virgata* (Linn. f.) O. Kuntze=*G. scoparioides* Turcz.)

6473 **5. BUDDLEJA** Linn., Sp. Pl., ed. 1, p. 112 (1753)
(*Chilianthus* Burch.)

Calyx-tube very short or almost none or campanulate; lobes 4, cut almost to the base or slightly longer than the tube or about as long as the tube or much shorter than the tube. *Corolla* slightly exceeding the calyx or much longer; tube campanulate or cylindric, sometimes hairy within; lobes 4, longer or much shorter than the tube, ovate-elliptic or oblong-elliptic, imbricate. *Stamens* 4, included or exserted, fixed in the throat of the corolla-tube or lower down in the corolla-tube; filaments filiform or almost obsolete; anthers shorter or longer than the filaments. *Ovary* usually subglobose, 2-chambered, with few to several ovules in each chamber, usually hairy; style included or exserted, usually terete; stigma truncate, globose or somewhat club-shaped, sometimes with the stigmatic surface lateral. *Fruit* a

- | | | | |
|---|-----|-----------------------------|---|
| 6. Filaments with a double-hooded scale or a flap at the base | ... | ... | 7 |
| Filaments without any appendage at the base | ... | ... | 8 |
| 7. Stamens 5; flowers massed in small axillary clusters | | | |
| | | 3. <i>Enicostemma</i> Blume | |
| Stamens 4; flowers massed to form a pseudo-umbel | | 4. <i>Faroo</i> Welw. | |
| 8. Corolla-lobes with a pair of glandular nectaries on the inner face | | | |
| | | 7. <i>Swertia</i> Linn. | |
| Corolla-lobes without nectaries | ... | 5. <i>Chironia</i> Linn. | |

6481

1. *SEBAEA* Soland. ex R. Br., Prodr., p. 451 (1810)

Calyx lobed almost to the base or with a distinct tube; tube when present cylindric or cup-shaped; lobes 4—5, often boat-shaped, ovate or obovate, sometimes acuminate, normally winged or keeled and sometimes pilose or bristly on the wings or keels. *Corolla* longer than the calyx; tube usually thin and membranous, cylindric or tubular; lobes 4—5, about as long as or shorter than the tube, oblong or obovate, spreading, contorted. *Stamens* 4—5, included or exerted, inserted at or shortly below the corolla-sinuses; filaments linear, evident or very short; anthers longer or shorter than the filaments, oblong or linear, with or without an apical gland, sometimes with 2 glands at the base. *Ovary* 2-chambered, with many axile ovules in each chamber; style longer or shorter than the corolla-tube, terete, usually with a pair of papillate or glandular patches on the basal portion; stigma capitate or clavate, sometimes bilobed. *Fruit* a capsule, globose or ovoid, with a membranous or thinly coriaceous pericarp, dehiscing septicidally into 2 valves. *Seeds* many, small, often angled, ridged or provided with narrow frills; embryo subglobose, small in relation to the size of the seed; endosperm fleshy.

Annual, biennial, or perennial herbs varying in height from less than 2 inches to 2 feet, with erect or more rarely procumbent simple or branched stems; leaves opposite, sessile, in 2—6 pairs or many pairs on the stems, sometimes forming a radical rosette, sometimes minute and filiform or ovate, cordate, orbicular-ovate or spatulate; inflorescence a terminal and axillary dichotomous cyme, sometimes contracted into a pseudo-head, rarely flowers solitary; flowers usually yellow, less commonly white.

Species about 115, natives of Africa, Madagascar, India, Australia, and New Zealand; over 80 species in South Africa, widely distributed in all the coastal areas; rare in the central districts; also found in the Transvaal, Natal, Basutoland, and the Orange Free State. (Type: *S. ovata* R. Br.)

6483

2. *BELMONTIA* E. Mey., Comment. Pl. Afr. Austr., p. 186 (1837)

(*Exochaenium* Griseb.)

Calyx divided almost to the base; segments 4—5, about $\frac{1}{2}$ as long as the corolla, ovate-lanceolate or lanceolate, acuminate, deeply channelled, keeled or broadly winged. *Disc-scales* forming a short ring between the base of the calyx and the base of the corolla. *Corolla-tube* ellipsoid below, slightly constricted and widening into a narrow campanulate portion; lobes 4—5, slightly shorter than the tube, ovate, oblong or broadly elliptic, acute. *Stamens* fixed to the corolla-tube at the constricted portion; filaments very short, linear; anthers much longer than the filaments, oblong, with a stalked or sessile apical gland and sometimes with 2 glands at the base, connate. *Ovary* 2-chambered with many ovules in each chamber; style shorter than the corolla-tube, terete, without glandular swellings; stigma

elongated, clavate or linear-lanceolate, fringed with papillae. *Fruit* a globose or ovoid coriaceous capsule, dehiscent septicidally into 2 valves. *Seeds* many, small.

Annual herbs, apparently saprophytic or with mycorrhiza, sometimes with a bulb; stems erect, simple or branched; leaves opposite, sessile, separated by long internodes, linear, linear-lanceolate, or lanceolate; flowers yellow, less commonly white, usually solitary, more rarely arranged in a few-flowered terminal or axillary cyme.

An African genus of 11 species; 2 species found in South Africa, extending from the Transvaal, Natal, Basutoland, to the eastern Orange Free State; also recorded from South West Africa. (Type: *B. cordata* (L. fil.) E. Mey.)

6484 **3. ENICOSTEMMA** Blume, Bijdr., p. 848 (1826)

Calyx-tube campanulate; lobes 5, occasionally 6, sometimes unequal, as long as the tube, lanceolate, with membranous margins. *Corolla* exceeding the calyx; tube ellipsoid below, then slightly constricted and narrowly funnel-shaped above; lobes 5, much shorter than the tube, lanceolate. *Stamens* 5, included, inserted at the middle of the corolla-tube; filaments linear, with a double-hooded scale at the base; anthers straight, lanceolate, longer or shorter than the filaments. *Ovary* 1-chambered, with numerous ovules on little protruded placentas; style about as long as the ovary, included, terete; stigma capitate. *Fruit* a capsule, oblong in outline, dehiscent septicidally into 2 valves. *Seeds* numerous, globose, foveolate; embryo straight, oblong in outline, small in relation to the size of the seed; endosperm fleshy.

Erect perennial herbs, usually unbranched; leaves opposite, sessile, linear or linear-lanceolate, entire; flowers massed in small axillary clusters.

Species 4, natives of Africa, tropical America, Madagascar, and Asia; 1 species in South Africa, recorded from the Transvaal, Natal, Ngamiland, and South West Africa. (Type: *E. littorale* Blume)

6485 **4. FAROA** Welw., Trans. Linn. Soc., vol. 27, p. 45, t. 17 (1869)

Calyx-tube shortly campanulate; lobes 4, longer than the tube, ovate. *Corolla* longer than the calyx; tube tubular-campanulate; lobes 4, longer than the tube, elliptic-lanceolate. *Stamens* 4, inserted in the sinus of the corolla-lobes and as long as the corolla-lobes; filaments terete, with a flap composed of short glandular hairs at the base of each; anthers oblong, with the thecae partly separated. *Ovary* 1-chambered, with numerous ovules on slightly intruded placentas; stigma 2-lobed or simple. *Fruit* a subglobose capsule, dehiscent septicidally into 2 valves. *Seeds* numerous, subglobose, foveolate.

Annual, rarely perennial, branching herbs, sometimes acaulescent; leaves opposite, with the basal leaves often forming a rosette, sessile, entire; flowers in dense terminal or axillary clusters, sometimes forming a pseudo-umbel, a pseudo-raceme or a pseudo-head.

An African genus of 10 species; 1 species recorded from Basutoland. (Type: *F. salutaris* Welw.)

6503 **5. CHIRONIA** Linn., Sp. Pl., ed. 1, p. 189 (1753)

Calyx sometimes leathery, sometimes glutinous, with a distinct tube or divided almost to the base; tube when present campanulate; lobes 5, shorter or longer than the tube, ovate, lanceolate, often acuminate. *Corolla* sometimes glutinous; tube campanulate or tubular, sometimes ellipsoid at the base and then contracted and expanded into a shallow campanulate portion

above; lobes 5, usually longer than the tube, usually elliptic. *Stamens* 5, shorter than the corolla-lobes, usually inserted in the corolla-throat, sometimes lower down on the corolla-tube; filaments terete or thick and linear; anthers oblong, ovate-oblong, sometimes sagittate at the base, straight or spirally twisted. *Ovary* 1-chambered, with numerous ovules on 2-fid placentas which are little intruded, often pointed above; style shorter than the corolla, terete, sometimes curved above; stigma truncate, clavate, or broad and flattened, simple or 2-lobed. *Fruit* on ovoid or subglobose capsule, dehiscing septicidally into 2 valves (in 1 species a berry). *Seeds* numerous, globose or angled, foveolate or with anastomosing ridges; embryo straight, cylindric, small in relation to the size of the seed; endosperm fleshy.

Annual or perennial glabrous herbs, often branched; leaves opposite, usually sessile, linear, elliptic-lanceolate, lanceolate, linear-lanceolate, or oblanceolate, sometimes all basal, usually separated by long internodes; inflorescence a cyme or a panicle of cymes or reduced to a single flower; flowers usually pink, rarely purple.

Species about 33, found in Africa and Madagascar; 25 species in South Africa, chiefly in the coastal districts; also recorded from the Transvaal, Zululand, Natal, and Basutoland. (Type: *C. linoides* Linn.)

6504 6. ORPHIUM E. Mey., Comm. Pl. Afr. Austr., p. 181 (1837)

Calyx glandular-hairy; tube campanulate, with an annular crenulate disc lining the base; lobes 5, longer than the tube, oblong, not keeled. *Corolla* longer than the calyx; tube ellipsoid, narrowed above; lobes 5, longer than the tube, elliptic-oblong, obtuse. *Stamens* 5, shorter than the corolla-lobes, inserted in the corolla-throat; filaments somewhat flattened at the base; anthers erect, about as long as or slightly longer than the filaments, oblong, at length spirally twisted. *Ovary* 1-chambered, with numerous ovules on protruded placentas; style terete, shorter than the corolla; stigma somewhat dilated, subtruncate, sometimes shallowly 2-lobed. *Fruit* a narrow-ovoid capsule dehiscing septicidally into 2 valves; pericarp viscid. *Seeds* numerous, mostly suborbicular in outline, biconvex; testa membranous, foveolate; embryo subglobose, small in relation to the size of the seed; endosperm fleshy.

An erect virgately branching somewhat viscid shrub, usually pubescent, sometimes slightly glabrescent; leaves opposite, sessile, broadly or narrowly linear; inflorescence a terminal leafy cyme or sometimes reduced to a single flower; flowers pink, showy.

Endemic; species 1, extending from the Clanwilliam to the Uniondale district. Type: *O. frutescens* (Linn. fil.) E. Mey.)

6512 7. SWERTIA Linn., Sp. Pl., ed. 1, p. 226 (1753)

Calyx divided almost to the base; lobes 4—5, oblong. *Corolla* divided almost to the base; lobes 4—5, elliptic, with a solitary or a pair of basal glandular nectaries which are sometimes fimbriated. *Stamens* 4—5, inserted in the corolla-sinuses, shorter than the corolla-lobes; filaments linear; anthers small, oblong, with the thecae separated. *Ovary* 1-chambered, with many ovules on intruded placentas; style short or obsolete; stigma broad, 2-lobed. *Fruit* a capsule, oblong or lanceolate in outline, dehiscing into 2 valves. *Seeds* many, compressed or globose, sometimes suborbicular and biconvex, with the testa foveolate, often winged; endosperm fleshy.

Annual or perennial herbs; leaves opposite, sessile or very shortly petioled, often separated by long internodes, sometimes with radical as well as cauline leaves; inflorescence a terminal corymb or paniculate cyme; flowers blue, yellow, or white.

Species about 90, natives of Africa, Madagascar, Europe, and Asia; 1 species in South Africa, recorded from the Transvaal, Zululand, Natal, and the eastern Orange Free State. (Type: *S. perennis* Linn.)

6544

8. *VILLARSIA* Vent., Choix., t. 9 (1803) partim.

Calyx divided almost to the base; lobes 5, ovate, lanceolate, subacuminate. *Corolla-tube* campanulate; lobes slightly longer than the tube, ovate-oblong, with a few long hairs on the inner face, induplicate-valvate. *Stamens* 5, inserted in the corolla-sinuses, shorter than the corolla-lobes; filaments linear; anthers longer than the filaments, ovate-linear, sagittate at the base. *Ovary* conical, long-acuminate, passing into the style, 1-chambered, with usually numerous ovules on thickened parietal placentas or with 2 discoid ovules, with 5 small hypogynous glands at the base; stigmas 2, petaloid, linear. *Fruit* a subglobose or ellipsoid capsule, opening by 4 apical valves. *Seeds* few or many, sometimes solitary, subglobose; embryo straight, cylindric, small in relation to the size of the seed; endosperm fleshy.

Herbs, usually found in marshy places; leaves radical; petioles up to 1 ft. long or shorter; blades ovate or oblong or lanceolate; sometimes with a few cauline leaves; inflorescence often about as long as the radical leaves, a cyme or panicle; flowers white or yellow.

Species 10, all Australian except 1 which occurs in South Africa and is found in marshy places from the Tulbagh to the Uitenhage districts. (Type: *V. ovata* (Linn. f.) Vent.)

6545

9. *LIMNANTHEMUM* S. M. Gmel., Novi Comment. Petropol., vol. 14, p. 527, t. 17, fig. 2 (1791)

Calyx divided almost to the base; lobes 5—6, oblong-lanceolate. *Corolla* slightly longer than the calyx; tube campanulate; lobes 5—6, oblong, with scattered long hairs on the inner face, induplicate-valvate. *Stamens* 5—6, inserted in the corolla-sinuses, shorter than the corolla-lobes; filaments linear; anthers shorter than the filaments, linear, sagittate at the base. *Ovary* 1-chambered, with several or many ovules on parietal placentas, with 5—6 hypogynous glands at the base; style almost obsolete; stigma 2-lobed. *Fruit* a globose, ovoid or ellipsoid capsule, indehiscent or irregularly rupturing. *Seeds* few or many, orbicular, biconvex; testa crustaceous; endosperm oily.

Aquatic herbs; stems erect or stolon-like; leaves alternate or subopposite, orbicular, elliptic, or ovate, usually deeply notched at the base with entire, crenate or dentate margins; flowers white or yellow, solitary or in pairs or fascicled at the nodes.

Species about 20, found in all tropical and temperate regions; 4 species in South Africa, extending from the Transvaal and Natal to the Cape; also recorded from Bechuanaland and South West Africa.

156. APOCYNACEAE

Flowers bisexual, regular. *Sepals* 5, rarely 4, free or rarely united to form a tube. *Corolla* usually much longer than the calyx; tube variously shaped, sometimes with scales, protuberances, ridges, or a corona in the mouth, glabrous or hairy within; lobes 5, longer or shorter than the tube, usually convolute, overlapping and frequently also twisted, very rarely valvate. *Disc* annular or cupular, 5-lobed or of 2—5 scales, sometimes more or less adnate to the ovary, rarely 0. *Stamens* 5, rarely 4, inserted in the corolla-tube or mouth of the corolla-tube, usually included, alternating with the corolla-lobes; filaments often very short, glabrous or hairy; anthers usually longer than the filaments, free or conniving in a cone, often with a short apical appendage, sometimes produced into long tails, often lobed or distinctly sagittate at the base, with the foot of the connective sometimes

produced into a short appendage, 2-thecous, polliniferous all the way down or in the upper portion only, glabrous or hairy. *Ovary* superior or slightly inferior, 1—2-chambered with 1 to many ovules in each chamber or gynaeceum of distinct carpels; style 1 or divided at the base; stigma various, frequently with a ring or other appendage at the base, entire or shortly bifid. *Fruit* baccate, drupaceous, samaroid or consisting of usually 2 baccate or follicular mericarps, rarely breaking up into 2 or 4 valves. *Seeds* various, frequently compressed, very often with a tuft of hairs at one or both ends, or winged, rarely with a plumose apical or basal awn; embryo straight; cotyledons flat, rarely folded; endosperm present or 0.

Trees, erect or scandent shrubs, or perennial, rarely annual, herbs; leaves simple, generally opposite, sometimes whorled, rarely spirally arranged, entire; stipules short, intrapetiolar, very rarely 1 on each side of the petiole, sometimes represented by spines, or none; inflorescence cymose, terminal or pseudo-lateral or truly axillary; bracts usually small and deciduous; flowers small to large and then often showy.

Genera about 180, with over 1,000 species, found chiefly in the tropics of both hemispheres.

- | | | |
|--|------------------------------------|----|
| 1. Ovary 1-chambered, with many ovules | 3. <i>Landolphia</i> Beauv. | |
| Ovary entire and 2-chambered or gynaeceum of 2 separate or partly separate carpels; ovules 1 to many in each ovary | ... | 2 |
| 2. Ovary entire, with 1—4 ovules in each chamber | ... | 3 |
| Gynaeceum of separate or partly separate carpels, with 2 to many ovules in each ovary | ... | 4 |
| 3. Unarmed shrubs | 1. <i>Acokanthera</i> G. Don | |
| Armed shrubs | 2. <i>Carissa</i> Linn. | |
| 4. Anthers produced into long hairy tails as long as or longer than the corolla-tube | 10. <i>Adenium</i> Roem. & Schult. | |
| Anthers often with apical appendages but not produced into long tails | ... | 5 |
| 5. Appendages in corolla-throat connate into a cup to form a distinct corona | 14. <i>Wrightia</i> R. Br. | |
| Appendages present or absent from the corolla-throat, when present not connate to form a distinct corona | ... | 6 |
| 6. Stipules transformed into rigid spines | 11. <i>Pachypodium</i> Lindl. | |
| Stipules when present not spinous | ... | 7 |
| 7. Corolla-lobes produced into long tails | 13. <i>Strophanthus</i> DC. | |
| Corolla-lobes longer or shorter than the tube but not produced into long tails | ... | 8 |
| 8. Mericarps baccate, more or less globose, ovoid, or pear-shaped, sometimes a drupe | ... | 9 |
| Mericarps follicular | ... | 11 |
| 9. Fruit a drupe; 2 ovules in each ovary-chamber | 8. <i>Rauvolfia</i> Linn. | |
| Fruit baccate; seed embedded in pulp; many ovules in each ovary-chamber | ... | 10 |
| 10. Calyx divided almost to the base; disc 0 | 6. <i>Conopharyngia</i> G. Don | |
| Calyx with a distinct tube which is circumscissile at the base; disc surrounding the ovary | 7. <i>Voacanga</i> Thour. | |
| 11. Ovules 2—4 in each ovary | 5. <i>Diplorhynchus</i> Welw. | |
| Ovules many in each ovary | ... | 12 |

12. Mericarps short, oblong or linear-oblong in outline, not cylindric or spindle-shaped; disc 0 4. *Gonioma* E. Mey.
 Mericarps long, cylindric or spindle-shaped; disc present at base of ovary 13
13. Corolla-tube glabrous within; leaves up to 3 in. long, shortly acuminate
 9. *Baissea* A. DC.
 Corolla-tube hairy within; leaves up to 1 in. long, not acuminate
 12. *Oncinotis* Benth.

6558 1. *ACOKANTHERA* G. Don, Gen. Syst., vol. 4, p. 485 (1837)

Sepals 5, free or almost so, ovate, acute, eglandular within. *Corolla* much longer than the calyx; tube cylindric, slightly widened above; lobes 5, much shorter than the tube, ovate, acute, overlapping to the left. *Stamens* 5, inserted deep in the corolla-throat, shorter than the corolla-lobes; filaments terete; anthers longer than the filaments, sometimes pilose at the apex. *Disc* 0. *Ovary* 2-chambered, with a single pendulous ovule in each chamber; style as long as the corolla-tube, cylindric; stigma conic or cylindric, usually with a ring of papillae at the base and minutely 2-lobed. *Fruit* a globose or ellipsoid berry. *Seeds* 2 or 1, black, convex-concave; embryo straight; cotyledons thin, elliptic; radicle long; endosperm firm.

Unarmed shrubs or small trees; leaves leathery, opposite, simple, elliptic, elliptic-lanceolate, or lanceolate, often apiculate; axillary stipules 0; axillary glands 0 or very scanty and minute; inflorescence a shortly peduncled or sessile corymb, axillary, often reduced to clusters; flowers subsessile, white or tinged with pink, usually sweet-scented.

Species 3, natives of Africa and Arabia; 2 species in South Africa, extending from the Transvaal, Swaziland, and Natal to the Mossel Bay district. (Type: *A. venenata* (Thunb.) G. Don)

6559 2. *CARISSA* Linn., Mant., vol. 1, p. 7 (1767)

(*Arduina* Mill.)

Sepals 5, very rarely 4, free or nearly so, ovate, acute, ciliate, eglandular or rarely multiglandular within. *Corolla* much longer than the sepals; tube cylindric, slightly widening below the mouth or near the middle, hairy within, sometimes densely hairy in the throat; lobes slightly longer or shorter than the tube, obovate-oblong, oblong-elliptic, sometimes long acuminate, usually pilose at the base, overlapping to the right, rarely to the left. *Stamens* as many as the corolla-lobes, inserted in the widened part of the corolla-tube or about half-way down; filaments short, linear, anthers linear, longer than the filaments, sometimes apiculate. *Disc* 0. *Ovary* entire, 2-chambered, with 1—4, rarely many, ovules in each chamber; style almost as long as the corolla-tube or $\frac{3}{4}$ as long, cylindric; stigma flat, elliptic or subglobose, usually with a 2-lobed hairy tip. *Fruit* a globose or ellipsoid berry. *Seeds* usually 1—4, flat, irregularly shaped; testa rough or smooth; embryo straight; cotyledons flat, elliptic; radicle about as long as the cotyledons; endosperm fleshy.

Much-branched straggling and usually spinous shrubs or small trees, rarely climbing; spines opposite, simple or forked, often very stout; leaves leathery, opposite, simple, ovate, elliptic, sometimes apiculate, sometimes variable on the same plant; axillary stipules 0; axillary glands very minute and few or 0; inflorescence often an umbel or a corymb and much contracted, terminal or pseudo-axillary, rarely a cyme; flowers subsessile, white or tinged with pink.

Species about 20, extending into the tropics of the Old World and Australia; 5 species in South Africa, extending from the Transvaal, Zululand, Natal, the

eastern Orange Free State to the Swellendam district; also recorded from the Somerset East district, Bechuanaland, Ngamiland, and South West Africa. (Type: *C. carandas* Linn.)

6562 3. LANDOLPHIA Beauv., Fl. d'Oware, vol. 1, p. 54, t. 34 (1806)

Calyx leathery, free almost to the base; sepals ovate or oblong, eglandular, often rusty hairy. *Corolla* much longer than the calyx; tube cylindric, broadly cylindric, or vase-shaped, usually narrowed above, naked at the mouth and sometimes much constricted by a callus ring; lobes 5, usually longer than the tube, obovate, oblong, or broadly linear, overlapping to the left. *Stamens* included, inserted in the throat of the corolla-tube or low down in the corolla-tube; filaments short; anthers longer than the filaments, ovate or lanceolate, usually apiculate. *Disc* 0. *Ovary* entire, 1-chambered, with numerous ovules from 2 parietal placentas, glabrous or hairy; style shorter than the corolla-tube, thick, terete; stigma conical from a thickened base which forms a collar round the stigma, shortly 2-lobed. *Fruit* a globose or pear-shaped berry, up to the size of a small orange. *Seeds* few or many, embedded in pulp; embryo straight; cotyledons irregularly undulate, thin; endosperm cartilaginous.

Shrubs, often large, usually climbing by tendrils or sensitive inflorescences, rarely dwarf shrubs or undershrubs, glabrous or hairy; leaves leathery, opposite, simple, lanceolate, elliptic, or oblong, entire, stipules 0; axillary glands minute, obscure, or subulate to filiform; inflorescence a few- or many-flowered corymb at the end of the branches or gathered in more or less elongated panicles; flowers sessile or pedicelled.

Species about 50, found in Africa and the Mascarene Islands; 4 species in South Africa, extending from the Transvaal, Zululand, into Natal; also recorded from Griqualand West. (Type: *L. owariensis* Beauv.)

6581 4. GONIOMA E. Mey., Comm. Pl. Austro. Afric., p. 188 (1837)

Sepals 5, free, ovate-elliptic, eglandular within. *Corolla* much longer than the calyx; tube narrowly tubular, with the mouth somewhat constricted, without appendages, pilose within; lobes 5, shorter than the tube, ovate, auricled at the base of the inner half, overlapping to the left. *Stamens* 5, included, inserted about the middle of the corolla-tube; filaments short, terete; anthers longer than the filaments, lanceolate, bluntly apiculate. *Disc* 0. *Carpels* 2, free, with many ovules in each ovary; style shorter than the corolla-tube, terete; stigma somewhat thickened, ovate in outline, 2-lobed. *Mericarps* 2, follicular, oblong or linear-oblong in outline, apiculate, semi-terete, straight or slightly curved, longitudinally ribbed. *Seeds* flat, broad-cuneate or subrectangular with a broad wing at one or both ends or the wings narrow; embryo straight, visible through the translucent endosperm; cotyledons flat, thin, elliptic; radicle stout, terete, about as long as the cotyledons; endosperm cartilaginous.

A glabrous shrub or small tree; leaves leathery, opposite or 3—4-nate, simple, subsessile, entire, lanceolate, shining; axillary stipules 0; axillary glands few, minute; inflorescence a terminal corymb.

Endemic; species 1, extending from Pondoland to the George, Knysna, and Humansdorp districts; also recorded from the Albany district. (Type: *G. camassi* (E. & Z.) E. Mey.)

6589 5. DIPLORHYNCHUS Welw., Trans. Linn. Soc., ser. 2, vol. 2, p. 22 (1881)

Calyx divided almost to the base, eglandular; sepals 5, ovate, hairy. *Corolla* much longer than the calyx; tube cylindric or subcampanulate, with the

mouth partly closed by a callus ring; lobes 5, much longer than the tube, linear-oblong. *Stamens* 5, inserted in the corolla-tube; filaments short, elliptic; anthers longer than the filaments, ovate, apiculate, sagittate at the base. *Disc* 0. *Carpels* 2, with 2—4 ovules in each ovary; style almost 0; stigma a thickened ring, then pointed and minutely 2-lobed. *Mericarps* 2, follicular, more or less oblong in outline, slightly curved. *Seeds* 2—4, compressed, somewhat plano-convex, with the funicle in the middle of one face, winged, with the wing of the basal seed terminal and that of the upper seed basal; cotyledons transversely oblong, flat; radicle lateral; endosperm scanty.

Small trees or small shrubs; twigs with a milky sap; leaves opposite, simple, petioled, elliptic or elliptic-lanceolate; stipules 0; axillary glands obscure or 0; inflorescence a terminal often lax panicle; flowers white, fragrant.

An African genus of 5 species; 1 species occurs in the Transvaal, Ngamiland, and South West Africa. (Type: *D. psilopus* Welw.)

6605 6. CONOPHARYNGIA G. Don, Gen. Hist., vol. 4, p. 94 (1838)

Sepals 5, almost free, ovate, with glands inside at the base, imbricate. *Corolla* much longer than the calyx; tube cylindric, spindle-, barrel-, or vase-shaped, sometimes pustulate without, naked in the mouth, usually more or less tomentose within; lobes 5, as long as the tube, elliptic, with a broad ear on one side, overlapping to the left, inflexed and descending into the corolla-tube in bud. *Disc* 0. *Stamens* 5, as long as the corolla-tube, inserted on the corolla-tube; filaments short, projecting on the back of the anthers as an ovate structure which adheres to the anthers; anthers longer than the filaments, conniving in a cone, ovate-lanceolate, apiculate, sagittate at the base. *Carpels* 2, free, with numerous ovules in each ovary; style shorter than the corolla-tube, compressed, widened above; stigma cylindric, grooved, with an entire or lobed projecting rim or short frill at the base and a minute 2-lobed apiculus, more rarely elliptic or globose. *Mericarps* baccate, usually more or less globose or ovoid, smooth, rarely keeled or warty, with a milky latex. *Seeds* many, embedded in a fleshy pulp, more or less ellipsoid, deeply grooved ventrally, with many narrow grooves on the back; embryo straight; cotyledons flat, elliptic; radicle cylindric, longer than the cotyledons.

Trees, often tall, or shrubs; bark sometimes corky; leaves opposite, simple, shortly petioled, large, elliptic, entire, penninerved; stipules united into a very short tubular sheath, usually with many resiniferous glands within; inflorescence terminal, or pseudo-axillary, corymbose, rarely paniced or reduced to few-flowered cymes; flowers usually white and fragrant, often large and showy to middle-sized, rarely small.

Species about 25, natives of Africa and the Mascarene Islands; 2 species in South Africa, extending from Zululand and Natal to Pondoland.

6612 7. VOACANGA Thour., Gen. Nov. Madag., p. 10 (1806)

Calyx-tube tubular or subcampanulate, with a ring or zone of scattered glands within near the base, early circumscissile at the base and deciduous or more persistent; lobes 5, shorter than the tube, broadly obovate. *Corolla* longer than the calyx; tube constricted below the middle and at the mouth, with callus thickenings round the often very narrow orifices and with prominent filamental ridges within; lobes 5, shorter than the tube, broadly ovate, unequal at the base. *Disc* usually annular, fleshy, surrounding the base of the ovary or cupular and concealing the ovary, rarely reduced to an inconspicuous ring. *Stamens* 5, shorter than the corolla-lobes; filaments 0; anthers adnate by a broad base to the corolla-tube, lanceolate-ovate, apiculate, deeply sagittate. *Carpels* 2, free, rarely connate to the middle,

with numerous ovules on bifid placentas in each ovary; style longer than the corolla-tube, compressed; stigma subcapitate, 5-grooved, with a fleshy wavy ring or frill at the base. *Mericarps* baccate, globose or pear-shaped, with a sticky latex. *Seeds* embedded in pulp, ellipsoid, grooved ventrally; testa ruminate; embryo straight; cotyledons flat, elliptic; radicle cylindric, longer than the cotyledons; endosperm cartilaginous.

Shrubs or trees, dichotomously branched; leaf-buds sometimes coated with resin; bark often thick and corky; leaves opposite, simple, narrowed into a petiole, oblanceolate or obovate, penninerved; leaf-bases united into a rim or short sheath; stipules distinct or 0; axillary glands present; inflorescence terminal, frequently paired, pedunculate, corymbose or in the form of an umbel; flowers white, yellow, or greenish or the limb violet-brown.

Species about 12, found in Africa, the Mascarene Islands, and the Malay Archipelago; 2 species in South Africa, recorded from the Transvaal, Zululand, and Natal. (Type: *V. thouarsii* Roem. & Schultes)

6619

8. RAUVOLFIA Linn., Sp. Pl., ed. 1, p. 208 (1753)

Calyx divided almost to the base or united into a shallow cup, eglandular within; sepals or segments 5, ovate, acute. *Corolla* longer than the calyx; tube tubular, slightly widened below the mouth, very rarely just below the middle, constricted at the mouth, without appendages, villous within and in the mouth; lobes 5, shorter than the tube, ovate, obtuse, overlapping to the left. *Disc* annular or cup-shaped, entire or slightly lobed. *Stamens* shorter than the corolla-lobes, attached to the corolla-tube; filaments terete, bent; anthers longer than the filaments, ovate, 2-lobed at the base. *Carpels* 2, free or more or less coherent, with 2 collateral ovules in each ovary; style subterete, shorter than the corolla-tube; stigma capitate or shortly cylindric, minutely papillose and slightly viscous, with a basal deflexed rim or membrane and a usually very short, slightly bilobed, apiculus arising from a shallow depression. *Mericarps* 2, or often 1 by abortion, black, free or more or less united, drupaceous. *Seed* compressed, obovate in outline, with short thick blunt protuberances; embryo straight; cotyledons flat; radicle cylindric, longer than the cotyledons; endosperm fleshy.

Mostly glabrous trees up to 100 ft. high or shrubs; bark sometimes corky; leaves often large, opposite or whorled, those of a whorl often very unequal, simple, shortly petioled, lanceolate or lanceolate-elliptic, entire, penninerved; stipules 0; axillary glands numerous, in a dense fringe or in clusters, frequently secreting resin; inflorescence terminal or pseudo-axillary, peduncled, few- or many-flowered, often repeatedly 2—3-chotomous, an umbel, corymb, rarely a raceme.

Species over 50, found in the tropics of both hemispheres, 1 species recorded from the Transvaal, Natal, Pondoland, to the Humansdorp district. (Type: *R. tetraphylla* Linn.)

6663

9. BAISSEA A. DC., Prodr., vol. 8, p. 424 (1844)

Calyx divided almost to the base, eglandular or with 5 glands; sepals or segments 5, lanceolate, ovate-lanceolate to rotundate. *Corolla* longer than the calyx; tube campanulate or funnel-shaped, usually widest or slightly constricted at the mouth, usually with fleshy projecting calli or scales just above the insertion of the stamens, glabrous within; lobes 5, longer than the tube, linear, overlapping to the right. *Disc* saucer-shaped, cupular, subtruncate, sinuate, or 5-lobed. *Stamens* shorter than the corolla-tube; filaments short, broad, hairy on the inner face; anthers longer than the filaments, conniving in a cone round the style and stigma, lanceolate, apiculate, long sagittate at the base, polliniferous in the upper part only, with the foot of the connective hollowed out. *Carpels* 2, with many ovules in each

ovary, hairy; style shorter than the stamens, terete; stigma ellipsoid, with 5 pits, with a small 2-lobed apex. *Mericarps* follicular, usually long-slender and cylindric, sometimes velvety. *Seeds* linear-lanceolate in outline, truncate at the tip, acute at the base, with a deciduous apical coma; cotyledons flat; radicle short; endosperm rather copious, fleshy.

Tall climbing shrubs; leaves opposite, simple, very shortly petioled, elliptic, oblong, obovate, lanceolate, entire, often acuminate; axillary stipules and glands 0; inflorescence a terminal and axillary panicle or corymb composed of few-flowered cymes, rarely a short few-flowered cyme; flowers white or purple.

An African genus of over 20 species; 1 species recorded from South West Africa. (Type: *B. multiflora* A. DC.)

6680 10. ADENIUM Roem. & Schult., Syst., vol. 4, pp. 35 & 411 (1819)

Calyx divided almost to the base, usually hairy; lobes 5, lanceolate or subulate, eglandular within. *Corolla* much longer than the calyx; tube cylindric below then expanded into a funnel-shaped or campanulate portion, usually hairy without; lobes 5, about as long as the tube, ovate or obovate, sometimes shortly acuminate, overlapping to the right, scales in mouth of tube alternating with the lobes, small or obscure, more or less confluent and forming obtriangular pockets. *Disc* 0. *Stamens* inserted in the widened part of the corolla-tube; filaments short, broadly linear, hairy; anthers longer than the filaments, conniving in a cone, lanceolate, with long filiform hairy appendages which are as long as or longer than the corolla-tube, sagittate at the base, polliniferous in upper portion only, with the foot of the connective bearing a small projection in the centre and a brush-like cushion below. *Carpels* 2, with many ovules in each ovary; style cylindric, shorter than the stamens; stigma capitate, with a broad rim and a minute bifid apiculus. *Mericarps* follicular. *Seeds* linear-oblong in outline, with a deciduous tuft of long hairs at each end; embryo straight; cotyledons folded; radicle large, contorted; endosperm 0.

Shrubs, sometimes up to 10 ft. high; stems often large and swollen with fleshy branches or branches woody and pustulate; leaves alternate, often in terminal fascicles, sessile or shortly petioled, simple, obovate, oblanceolate, elliptic, or linear, entire; axillary stipules 0; axillary glands conspicuous, several in each leaf axil; inflorescence a few-flowered subsessile terminal cyme; flowers pink or purple, sometimes partly white, showy.

Species about 12, natives of Africa, Socotra, and Arabia; 4 species in South Africa, recorded from the Transvaal, Swaziland, Zululand, Natal, and South West Africa; also recorded from the north-western districts of the Cape Province. (Type: *A. obesum* (Forsk.) Roem. & Schult.)

6681 11. PACHYPODIUM Lindl., Bot. Reg., t. 1321 (1830)

Calyx divided almost to the base, usually hairy; sepals sometimes leafy, oblong-linear, ovate-lanceolate, or ovate. *Corolla* much longer than the calyx; tube cylindric below or broadly cylindric below, tubular or narrowly campanulate above, usually hairy without, densely hairy within or hairy within on lower portion only; lobes 5, much shorter than the tube, oblong-elliptic, obovate, or obliquely obovate, obtuse, sometimes acuminate, overlapping to the right. *Stamens* inserted deep in the corolla-tube; anthers sessile, conniving in a cone, lanceolate, with a short terminal appendage, tailed at the base, polliniferous in the upper part only, with a projection near the foot of the connective and often a brush-like cushion below. *Disc* cupular, slightly 5-lobed, or replaced by 2—5 distinct glands. *Carpels* 2 free, with many ovules in each ovary; style cylindric or compressed, shorter than the stamens; stigma subcylindric, with an annular rim or membrane

at the base, very obscurely and obtusely 2-lobed. *Mericarps* follicular, spindle-shaped. *Seeds* ovate to oblong in outline, bluntly keeled on both sides or convex on both sides, with an apical tuft of hairs; testa smooth or covered with short blunt protuberances; embryo straight; cotyledons flat, elliptic or orbicular; radicle pointing to the tuft of hairs, biconvex in cross-section or more or less 4-angled; endosperm 0.

Succulent shrubs often with a much swollen trunk, sometimes with a single trunk up to 10—12 ft. high with a terminal rosette of leaves; leaves alternate, subsessile, simple, obovate, elliptic, lanceolate, or linear, entire, sometimes pungent at the tip, sometimes tomentose; stipules transformed into rigid spines; inflorescence a few- or many-flowered terminal sessile or peduncled cyme; flowers pink, white, or yellow.

Species about 13, natives of Africa and Madagascar; 6 species in South Africa, found in the Transvaal, Swaziland, Zululand, Natal, the Orange Free State, and extending to the Humansdorp and Uniondale districts; also recorded from Bechuanaland, Namaqualand, South West Africa, the north-western and many of the central districts of the Cape Province. (Type: *P. succulentum* (Thunb.) A. DC.)

NOTE.—It seems strange that neither de Candolle in the *Prodromus* nor [Stapf in the *Flora Capensis* makes mention of the species described by Lindley as *Pachypodium tuberosum*.—E. P. P.

6686 12. ONCINOTIS Benth., in Hook. Niger Fl., p. 451 (1849)

Calyx divided almost to the base; sepals 5, oblong-lanceolate or ovate-oblong, eglandular within or rarely with 5 minute glands. *Corolla* longer than the calyx; tube tubular, with 5 ligulate appendages in the mouth alternating with the lobes, hairy without and within; lobes 5, reflexed, about as long as the tube, linear, overlapping to the right. *Stamens* inserted somewhat above the base of the corolla-tube and as long; anthers sessile, conniving in a cone, linear, apiculate, shortly sagittate at the base, with the foot of the connective produced into a linear appendage which lies in a channel on the anther, with a cushion of hairs at the base, polliniferous in the upper portion only. *Disc* cupular, 5-lobed or 5-partite. *Carpels* 2, free, with many ovules in each ovary; style very short; stigma spindle-shaped with a 2-lobed apiculus. *Mericarps* follicular, spindle-shaped. *Seeds* lanceolate, linear, or oblong; embryo straight; cotyledons flat, linear or elliptic; endosperm 0.

Scandent shrubs; leaves opposite, shortly petioled, simple, obovate, oblong-elliptic, or elliptic, often shortly acuminate, sometimes apiculate, entire, glabrous or hairy; stipules and axillary glands 0; inflorescence a panicle of few- to many-flowered contracted cymes, axillary or axillary and terminal; flowers sometimes greenish, small.

Species about 12, natives of Africa and Madagascar; 2 species in South Africa, recorded from Bechuanaland and Natal. (Type: *O. nitida* Benth.)

6688 13. STROPHANTHUS DC., in Bull. Soc. Philom., vol. 3, p. 122, t. 8 (1802)

Calyx divided to the base, glabrous or hairy; sepals sometimes foliaceous, long-linear or linear-lanceolate, glandular at the base. *Corolla* much exceeding the calyx; tube cylindric below, tubular above or tubular below and campanulate above, with paired appendages in the throat alternating with the lobes, glabrous within and without; lobes 5, usually much longer than the tube, produced into long-linear tails. *Disc* 0. *Stamens* inserted deep in the corolla-tube and shorter than the tube; filaments short, linear; anthers longer than the filaments, conniving in a cone, linear-lanceolate, with a long or short apical appendage, shortly bluntly or acutely sagittate at the base, with the foot of the connective produced into an appendage or

evident ridge, and often hairy at the base, glabrous or hairy. *Carpels* 2, free, with many ovules in each ovary; style shorter than the stamens; stigma capitate, 5-grooved, with a membranous reflexed frill at the base and a minutely bifid apiculus. *Mericarps* follicular, oblong in outline or spindle-shaped, sometimes pustulate. *Seeds* spindle-shaped or flat and lanceolate, with an apical plumose awn and a deciduous basal coma; embryo straight; cotyledons elliptic or lanceolate; radicle cylindric, almost as long as the cotyledons; endosperm scanty or 0.

Shrubs, often scandent; leaves opposite, simple, shortly petioled, ovate, elliptic, lanceolate or linear, entire; stipules 0; axillary glands 2—6, rarely more, subulate or conical; inflorescence terminal, often at the ends of short branches, corymbose, many- or few-flowered or reduced to solitary flowers; flowers mostly showy.

Species about 50, natives of Africa and tropical Asia; 4, possibly 5, species in South Africa, extending from the Transvaal, Zululand, and Natal to the Bedford district; also recorded from South West Africa.

6689 14. WRIGHTIA R. Br., in Mem. Werner. Soc., vol. 1, p. 73 (1809)

Calyx divided almost to the base; sepals 5, ovate. *Corolla* longer than the calyx; tube short, more or less oblong in outline, with a large 10-lobed cup in the throat and 10 free linear appendages on the inner base of the cup or with free appendages in the throat; lobes 5, lanceolate, longer than the tube, overlapping to the left. *Disc* 0. *Stamens* inserted in the mouth of the corolla, about $\frac{1}{2}$ as long as the corolla-lobes; filaments very short, with a tuft of hairs at the back; anthers longer than the filaments, connivent in a cone, linear-lanceolate, with a short hairy apical appendage, long- or short-sagittate at the base, with a small projecting appendage from the foot of the connective and a line of hairs below the appendage, polliniferous in upper portion only. *Carpels* 2, free, with many ovules in each ovary; style terete, shorter than the stamens; stigma subglobose, with a reflexed frill at the base and a short stout terete portion above and a minute cleft tip. *Follicles* cylindric or spindle-shaped. *Seeds* cylindric or spindle-shaped, glabrous except for a basal tuft of hairs; embryo straight; cotyledons folding round one another to form a spindle-shaped body; radicle terete, projecting from the base of the spindle; endosperm 0.

Large or small trees or shrubs; leaves opposite, simple, shortly petioled, lanceolate or ovate-lanceolate, entire or faintly crenate; stipules 0; inflorescence a terminal or pseudo-axillary cyme; flowers sometimes cream, small or large and showy.

Species about 30, natives of Africa, Asia, and Australia; 1 species recorded from the northern Transvaal and Natal.

157. ASCLEPIADACEAE

Flowers regular, bisexual. *Calyx* usually of 5 free sepals, more rarely 5-lobed, frequently with scales within at the base. *Corolla* gamopetalous, very variable in shape and size; lobes 5, imbricate, contorted, or valvate in aestivation, sometimes connate at the tips, rarely connate into a column at the middle and then free and again connate at the tips, sometimes with the sinuses between the lobes produced into short teeth. *Corona* in 1—3 series, consisting of free or connate lobes, processes, keels, tubercles, or flaps which usually arise from the base of the staminal-column or between the staminal-column and the base of the corolla, rarely corona arising from the corolla-tube, rarely absent. *Stamens* 5, inserted at or near the base of the corolla-tube, rarely at the middle or in the mouth of the corolla-tube; filaments sometimes

free but usually connate into a staminal-column, and often united at the apex to the dilated portion of the style; anthers free or united to the dilated portion of the style, 2-theous, with the connective often produced into membranous appendages; pollen granular or united into 1 or 2 waxy masses which are attached in pairs or in fours to small pollen-carriers by usually short caudicles, more rarely the pollen-masses sessile on the pollen-carriers. *Gynaecium* of 2 carpels; carpels free below; styles united above and dilated at the middle or the apex into usually a pentagonal disc; ovules usually numerous, rarely few or solitary, pendulous. *Fruit* of 2 follicles, rarely 1 by abortion; follicles variable in form, smooth, echinate, or winged, opening by the ventral suture. *Seeds* usually numerous, very rarely few or solitary, variously shaped, usually with a broad or narrow marginal wing, usually with a tuft of long silky hairs at one end; embryo straight; cotyledons usually flat; radicle usually shorter than the cotyledons; endosperm present or absent.

Erect, prostrate, twining, or scrambling herbs or shrubs, with milky or watery juice; stems often from underground tubers simple or branched often succulent and with terete or angular branches often toothed or spiny at the angles; leaves often rudimentary, when developed then opposite or whorled, rarely alternate, petioled or sessile, usually with entire margins; inflorescence an umbel, umbel-like cyme, or raceme, more or less lateral between the bases of the leaves or terminal or flowers solitary; flowers very variable in size and form.

Genera about 220, with over 1,800 species, widely spread throughout the tropical and subtropical regions, more rarely in temperate regions.

1. Filaments of the stamens free; pollen of loose granules; each granule formed of 4 pollen grains united into a tetrad or of 3—5 united in a row 2

Filaments of the stamens, when present, connate round the ovary into a tube which is sometimes very short and ring-like; the top of the tube or the anthers or both adnate to the dilated part of the style; pollen contents of each anther-theca united into 1 or 2 waxy masses; pollen-carriers quadrate, turgid or rarely dorsally flattened, with a suture down the back, never spatulate or trumpet-shaped 7
2. Corolla with a distinct campanulate or cylindric tube; corona inserted at the middle of or in the mouth of the corolla-tube 3

Corolla divided almost to the base; corona from the corolla at or near the base of the staminal-column... .. 6
3. Corona-lobes inserted on the corolla-tube with the stamens and occasionally on their filaments, entire, bifid or trifid

6. *Raphionachme* Harv.

Corona-lobes inserted on the corolla-tube distinctly above the base of the stamens... .. 4
4. Corona-lobes inserted at or about the middle of the corolla-tube

4. *Cryptolepis* R. Br.

Corona-lobes inserted in the mouth of the corolla-tube 5
5. Corona-lobes subulate; apiculus of anther filiform and hairy

3. *Ectadium* E. Mey.

Corona-lobes clavate; apiculus of anther glabrous

5. *Stomatostemma* N. E. Br.
6. Corona-lobes broadly obcordate or obreniform, with or without an erect or incurved dorsal process; stipules well developed, toothed or frill-like 1. *Chlorocodon* Hook. f.

Corona-lobes filiform and simple or divided above into 2 or 3 filiform segments; stipules represented by a line connecting the bases of the petioles 2. *Tacazzea* Decne.

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| 7. Pollen-masses 2 in each anther-theca | 25. Secamone R. Br. | |
| Pollen-masses solitary in each anther-theca | | 8 |
| 8. Pollen-masses pendulous in the anther-thecae | ... .. | 9 |
| Pollen-masses erect, ascending, or horizontal in the anther-thecae | ... .. | 29 |
| 9. Corona none or of 5 inconspicuous tubercles or scales on the corolla-tube which alternate with tufts of hairs near their base, middle, or top; no tubercles or scales on the staminal-column | ... .. | 10 |
| Corona distinct, adnate to the corolla-tube or arising from the staminal-column or in the angle between the staminal-column and the corolla | ... .. | 11 |
| 10. Corolla-lobes connivent over and spirally arranged around and partly closing the mouth of the tube; corona-tubercles often present; style much shorter than the corolla-tube or scarcely exceeding the anthers | 7. Microloma R. Br. | |
| Corolla-lobes erect or spreading, not partly closing the mouth of the tube; corona none; style as long as the corolla-tube or as the corolla | 8. Astephanus R. Br. | |
| 11. Corona adnate to the corolla-tube, quite free from the staminal-column | 9. Parapodium E. Mey. | |
| Corona from the staminal-column or in the angle between it and the corolla, none on the corolla | ... .. | 12 |
| 12. Stems erect, decumbent, or prostrate, never twining | ... .. | 13 |
| Stems twining or rambling | ... .. | 24 |
| 13. Corona of 5 distinct free lobes in one series; outer corona none or reduced to very minute lobules, teeth of (in <i>Periglossum</i>) filiform processes which alternate with the lobes | ... .. | 14 |
| Corona-lobes united into a tube (at least at the base) or corona complex or of 3 series of erect lobes | ... .. | 23 |
| 14. Corona-lobes laterally flattened or at least measuring as much from front to back as in breadth, with the sides folded together throughout or at the base or apex | 20. Asclepias Linn. | |
| Corona-lobes usually dorsally flattened, often thick and fleshy | ... .. | 15 |
| 15. Scales in the leaf-axils | 13. Kanahia R. Br. | |
| Scales absent from the leaf-axils | ... .. | 16 |
| 16. Style projecting beyond the staminal-column as a club-shaped structure | 14. Cordylogyne E. Mey. | |
| Style sometimes slightly projecting beyond the staminal-column, but not as a club-shaped structure | ... .. | 17 |
| 17. Pollen-carriers with a narrow membranous wing | 19. Woodia Schltr. | |
| Pollen-carriers not winged | ... .. | 18 |
| 18. Caudicles at least twice as long as the pollen-masses | 15. Periglossum Decne. | |
| Caudicles shorter than the pollen-masses | ... .. | 19 |
| 19. Corona-lobes usually with an appendage and 2 keels on the inner face | 11. Schizoglossum E. Mey. | |
| Corona-lobes without an appendage on the inner face | ... .. | 20 |
| 20. Corona-lobes linear-oblong, with 2 large lobules at the base | 12. Fanninia Harv. | |
| Corona-lobes not as above | ... .. | 21 |

21. Corona-lobes with a rhomboid wing-like dilation on the back at the base
 17. Krebsia Harv.
 Corona-lobes without a wing-like dilation on the back 22
22. Corona-lobes usually shortly and thickly stalked with 2 flaps or wings
 on the inner face; rarely of two fleshy flaps and attached by a broad
 foot to the staminal-column **18. Pachycarpus** E. Mey.
 Corona-lobes not as above **10. Xysmalobium** R. Br.
23. Corona of 5 lobes, very shortly connate at the base
 15. Periglossum Decne.
 Corona of 3 series, with 5 lobes in each series
 16. Eustegia R. Br.
24. Corona in 1 series 25
 Corona in 2 distinct series 28
25. Corona of 5 free simple lobes which are laterally compressed and dorsally
 grooved **23. Glossostephanus** E. Mey.
 Corona of 5 free obconic or trumpet- or slipper-shaped lobes or annular,
 cup-shaped, or tubular, or of 5 tubercles adnate to the staminal-
 column 26
26. Corona-lobes obconic or trumpet-shaped or slipper-shaped
 21. Pentarrhinum E. Mey.
27. Corona annular, cup-shaped, or tubular **22. Cynanchum** Linn.
 Corona usually of 5 tubercles adnate to the staminal-column
 52. Tylophora R. Br.
28. Inner corona of 5 simple lobes; stem apparently leafless
 24. Sarcostemma R. Br.
 Inner corona of 5 fleshy lobes, produced into a subulate incurved horn
 at the apex; leaves large, cordate **55. Pergularia** Linn.
29. Stems herbaceous or woody with well-developed leaves, rarely apparently
 leafless and then without distinct angles 30
 Stems thick and fleshy, 3- to many-angled, apparently leafless or the teeth
 tipped with rudimentary or small subulate fleshy leaves 46
30. Corona none **49. Rhyssolobium** E. Mey.
 Corona in 1 or 2 or 3 series, rarely tubular 31
31. Corona in 1 series, rarely tubular 32
 Corona in 2 or 3 series or falsely in 1 series of 3-fid lobes or if in 1 series
 the corolla-lobes connate at the tips (*Riocreuxia*) 42
32. Corona of 5 lobes on the corolla-tube and adnate up to its mouth
 50. Gymnema R. Br.
 Corona arising from the staminal-column or tubular 33
33. Corona of distinct lobes or tubercles without a dorsal arm or appendage
 on the inner face 34
 Corona-lobes with a subulate appendage or long filiform appendages on
 their inner face or sometimes tubular 40
34. Leaves broad, spatulate, oblong, elliptic, ovate or ovate-lanceolate ... 35
 Stems apparently leafless or leaves linear or filiform 38
35. Corona of 5 half-moon or transversely oblong lobes or of \wedge -shaped lobes
 27. Orthanthera Wight
 Corona-lobes of fleshy tubercles or lobes 36

36. Stems twining 37
 Stems not twining 51. *Sphaerocodon* Benth.
37. Corolla-lobes connate at their tips ... 32. *Riocreuxia* Decne.
 Corolla-lobes not connate 54. *Marsdenia* R. Br.
38. Corolla-tube exceedingly short; lobes long-linear filiform, reflexed
 28. *Macropetalum* Burch.
 Corolla-tube elongated, campanulate or globose-campanulate, lobed to
 about half-way down 39
39. Corolla-tube globose, 5-winged or 5-angled; corona of \wedge -shaped lobes
 27. *Orthanthera* Wight
 Corolla-tube not winged or angled; corona of 5 oblong or ovate lobes
 26. *Sisyranthus* E. Mey.
40. Corona tubular, arising in the angle between the staminal-column and
 the corolla 58. *Fockea* Endl.
 Corona of 5 lobes 41
41. Stems twining 56. *Telosma* Coville
 Stems several, prostrate 29. *Anisotoma* Fenzl
42. Corolla-tube tubular, 2 to several times as long as its diameter at the
 middle, often inflated at the base... .. 43
 Corolla-tube very small, sometimes 0, not twice as long as its diameter
 at the middle, very rarely tubular and slightly inflated at the base ... 44
43. Inflorescence of laxly branching cymes or in fascicles at the 2—3 nodes
 of simple peduncle-like flowering axes (which are bent at the nodes)
 with or without another fascicle at their base or all compactly fascicu-
 late at the nodes of the stem ... 32. *Riocreuxia* Decne.
 Flowers solitary or in pairs, or inflorescence an umbel-like cyme or rarely
 a raceme, lateral at the nodes, rarely terminal
 31. *Ceropegia* Linn.
44. Leaves long-petioled, cordate at the base 53. *Emplectanthus* N. E. Br.
 Leaves sessile or shortly petioled, very rarely subcordate at the base 45
45. Corolla-tube very short; lobes free; leaves linear or filiform
 57. *Tenaris* E. Mey.
 Corolla-tube campanulate, cup-shaped, or shortly tubular; lobes free or
 connate at their tips; leaves various 30. *Brachystelma* R. Br.
46. Corolla-lobes connate at the tips ... 48. *Pectinaria* Haw.
 Corolla-lobes free 47
47. Corolla with intermediate lobes or points at the sinuses between the lobes
 46. *Huernia* R. Br.
 Corolla without lobes or points at the sinuses 48
48. Stems 6—10-angled with tessellate cylindric angles
 33. *Echidnopsis* Hook. fil.
 Stems 6—30 or more, angled with tuberculate angles 49
49. Stem tubercles tipped with 3 bristles; outer corona-lobes ending in a knob
 37. *Tavaresia* Welw.
 Stem tubercles not tipped with 3 bristles; corona-lobes not ending in
 knobs 50
50. Stems 12—30 or more angled 51
 Stems 4—9-angled 52

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| 51. Limb of the corolla nearly entire; the lobes reduced to subulate points; stem tubercles tipped with stiff bristles | 34. Hoodia Sweet | |
| Limb of corolla distinctly lobed; stem tubercles pointless or tipped with a spine or hair. | 36. Trichocaulon N. E. Br. | |
| 52. Stems 7—9-angled | ... | 53 |
| Stems 4—6-angled | ... | 54 |
| 53. Inner corona-lobes 1-horned | 45. Luckhoffia White & Sloane | |
| Inner corona-lobes 2-horned | 35. Hoodiopsis Luckhoff | |
| 54. Corona single | ... | 55 |
| Corona double | ... | 56 |
| 55. Corona-lobes crested | 38. Piaranthus R. Br. | |
| Corona-lobes not crested | 39. Huerniopsis N. E. Br. | |
| 56. Outer corona long tube-shaped | 44. Stapeliopsis Pillans | |
| Outer corona cup-shaped or annular or forming a solid disc or of 5 free lobes... | ... | 57 |
| 57. Corolla with a secondary tube arising from the centre of the disc | 47. Diplocyatha N. E. Br. | |
| Corolla with or without an annulus, but not with a secondary tube | ... | 58 |
| 58. Outer corona forming a solid disc | 40. Duvalia Haw. | ... |
| Outer corona cup-shaped or annular or of 5 free lobes | ... | 59 |
| 59. Outer corona of 5 free lobes | 42. Stapelia Linn. | |
| Outer corona cup-shaped or annular | ... | 60 |
| 60. Corolla with a broad annulus | 43. Stultitia Phillips | |
| Corolla without an annulus | 41. Caralluma R. Br. | |

6729 1. CHLOROCODON Hook. f., Bot. Mag., t. 5898 (1871)

Sepals 5, ovate. *Corolla* lobed nearly to the base; lobes 5, longer than the tube, oblong or elliptic. *Corona* of 5 lobes arising from the base of the staminal-filaments; lobes free, very broadly obcordate or obreniform, with or without a linear-lanceolate acuminate dorsal process which is about $\frac{1}{2}$ as long as the corolla-lobes. *Stamens* arising from the base of the corolla; filaments free; anthers linear, adnate to the dilated part of the style, connivent in a cone, connate at the tips. *Pollen* granular. *Follicles* thick, lanceolate in outline. *Seeds* compressed, ovate, with a keel on each face; with an apical tuft of hairs; embryo straight; cotyledons flat, elliptic; radicle cylindric, as long as the cotyledons; endosperm very scanty.

Tall climbers; leaves large, opposite, petioled, simple, elliptic, ovate, or orbicular, sometimes acuminate, usually subcordate at the base, entire; inflorescence a paniculate cyme arising in the axils of the leaves.

Species 2, both African; 1 species recorded from Swaziland, Zululand, and Natal. (Type: *C. whiteii* Hook. f.)

NOTE.—The specific epithet is incorrectly spelt in the *Flora Capensis*.—E. P. P.

6730 2. TACAZZEA Decne., DC. Prodr., vol. 8, p. 492 (1844)

Sepals 5, ovate, hairy. *Corolla* lobed almost to the base; lobes oblong, oblong-elliptic, or ovate-lanceolate. *Corona-lobes* 5, arising from the corolla at or near the base of the staminal-filaments and usually shortly adnate to them, filiform or linear, simple or linear and divided above into 2 or 3

filiform segments, sometimes longer than the corolla-lobes. *Stamens* inserted at or near the base of the corolla; filaments free or free above and united at their base into a ring, with 5 subquadrate emarginate or bifid alternating lobules which are sometimes minute; anthers oblong, attached at their base to the dilated part of the style, connivent in a cone, cohering at their tips; pollen granular. *Follicles* diverging, ovate, lanceolate, or linear in outline, acuminate, sometimes tomentose. *Seeds* compressed, more or less obovate, keeled on one face, sometimes narrowly winged on one side; embryo straight; cotyledons flat, elliptic; radicle terete, shorter than the cotyledons; endosperm scanty.

Twining or erect shrubs, with milky juice; leaves opposite or whorled, petioled, oblong-elliptic, ovate-elliptic, elliptic, often apiculate, entire, sometimes tomentose beneath; stipules usually represented by a transverse line (often with fleshy glands along it) connecting the petioles; inflorescence an axillary paniculate or corymbose cyme, often arising from both leaf-axils.

Species about 15, all African; 4 species in South Africa, recorded from the northern Transvaal and Natal to the Transkei; also found in South West Africa. (Type: *T. venosa* (Hochst.) Decne.)

6735 3. ECTADIUM E. Mey., Comment. Pl. Afr. Austr., p. 188 (1837)

Calyx somewhat fleshy, lobed almost to the base; sepals 5, ovate, tomentose. *Corolla* somewhat fleshy; tube oblong in outline, pubescent without; lobes 5, about as long as the tube, elliptic, obtuse. *Corona* of 5 small lobes in the mouth of the corolla-tube and alternating with the corolla-lobes. *Stamens* inserted at the base of the corolla-tube; filaments free, short, subterete; anthers longer than the filaments, adnate at their base to the dilated part of the style, ovate, produced into a hairy appendage; pollen granular. *Follicles* widely divergent, lanceolate in outline. *Seed* more or less lanceolate, concave on one side and with a single rib, with a silvery sheen; embryo straight; cotyledons flat, oblong; radicle terete, shorter than the cotyledons; endosperm scanty.

Shrubby with erect virgate stems; leaves leathery, opposite, subsessile, simple, linear-lanceolate, lanceolate, or oblong-lanceolate, apiculate, entire, sometimes pitted; inflorescence a lateral cyme.

Endemic; species 2, recorded from Namaqualand and South West Africa. (Type: *E. virgatum* E. Mey.)

NOTE.—In the *Flora Capensis* Dr. N. E. Brown makes mention of the minute irregular pits on the surface of the leaves. When viewed under a good microscope the pits are seen to contain a fine powder. In a specimen (Dinter 6290) some of the leaves are covered with branching structures much resembling the mycelium of a fungus but of mineral origin as they dissolve freely in water and weak hydrochloric acid.—E. P. P.

6740 4. CRYPTOLEPIS R. Br., Mem. Werner. Soc., vol. 1, p. 69 (1811)

Calyx divided to the base; lobes 5, ovate or elliptic. *Corolla-tube* campanulate, usually with small pocket-like flaps in the angles between the lobes; lobes 5, longer than the tube, oblong or long-attenuate from an ovate base. *Corona* of 5 fleshy lobes arising from the middle of the corolla-tube. *Stamens* arising from the lower part of the corolla-tube; filaments very short, free; anthers longer than the filaments, with the connective produced into an apiculus, more or less connivent in a cone; pollen granular; pollen-carriers more or less spatulate. *Follicles* terete, cylindric, subfusiform, or ovate in outline, sometimes acuminate, smooth. *Seeds* brown or black, linear or oblong, concave and with a single rib on one face, smooth or pustulate, crowned with a tuft of hairs; embryo straight; cotyledons flat, oblong; radicle cylindric almost as long as or shorter than the cotyledons; endosperm scanty.

Erect or twining shrubs; leaves opposite, simple, shortly petioled, elliptic, oblong, lanceolate, linear, or obovate, sometimes apiculate, entire; inflorescence an axillary or terminal cyme or rarely flowers subsolitary.

Species about 12, distributed through the warmer parts of the Old World as far north as Cashmere; 6 species in South Africa found in the Transvaal, Swaziland, Natal to the Transkei; also recorded from South West Africa.

6741 5. STOMATOSTEMMA N.E. Br., in Fl. Trop. Afr., vol. 4, p. 252 (1902)

Calyx divided almost to the base; lobes 5, ovate, with scales at the base within. *Corolla-tube* broadly campanulate; lobes 5, longer than the tube, oblong. *Corona* of 5 large fleshy clavate lobes inserted in the sinuses between the corolla-lobes. *Stamens* inserted near the base of the corolla-tube; filaments free, very short and broad; anthers longer than the filaments, united at their bases to the dilated part of the style, connivent in a cone, with the connective produced into an apiculus; pollen granular; pollen-carriers with the margins inrolled so as to nearly form an oblique-mouthed tube, broadly ovate when flattened out, grooved down the back.

A scrambler; leaves opposite, simple, shortly petioled, lanceolate, linear-lanceolate; inflorescence a few-flowered axillary cyme, sometimes also terminal or an elongated panicle, sometimes somewhat corymbose; flowers cream, with dull-brown streaks in the corolla-tube or pinkish and brown-spotted.

An African genus of 4 species; found in the northern Transvaal and Ngamiland. (Type *S. monteiroae* (Oliv.) N. E. Br.)

6747 6. RAPHIONACME Harv., in Hook. f., London Journ. Bot., vol. 1, p. 22 (1842)

Calyx divided almost to the base, usually hairy; lobes 5, usually shorter than the corolla-tube, rarely as long or longer, ovate, lanceolate, or linear, often acuminate, frequently with scales at the base within. *Corolla* usually hairy; tube campanulate, rarely very short; lobes longer than the tube, ovate-lanceolate or ovate-elliptic, sometimes reflexed, often with 2 narrow ridges on their basal half. *Corona* of 5 free entire bifid or trifid lobes, sometimes lobes appearing almost free so that corona appears as 15 linear lobes with the one alternating with the corolla-lobes as long as the corolla-lobes and the 2 lateral much shorter, rarely corona-lobes petaloid, inserted in the mouth of the corolla-tube or with the stamens on the corolla-tube. *Stamens* inserted on the corolla-tube or in the mouth of the corolla-tube; filaments free, often dilated or swollen at the base; anthers longer than the filaments, connivent in a cone, and connate at their tips, adnate at their base to the dilated part of the style; pollen granular; pollen-carriers spathulate. *Follicles* often solitary by abortion, fusiform, or lanceolate or linear in outline. *Seeds* compressed, usually ribbed on one side, with a tuft of hairs; embryo straight; cotyledons flat, elliptic; radicle compressed or subterete, shorter than the cotyledons; endosperm scanty or 0.

Perennial herbs; rootstock a depressed or ovoid tuber often having a long woody neck or consisting of long fusiform fleshy roots; juice milky; stem often dwarf, simple or branched, sometimes twining; leaves opposite, shortly petioled or subsessile, simple, obovate, oblong, elliptic, semiorbicular, or linear, sometimes hairy; inflorescence a few- or many-flowered cyme, subaxillary from one leaf-axil, lateral at the nodes, terminal, or seated in the forks of the stem or flowers clustered; flowers greenish, greenish-yellow, rarely purple, with the corona sometimes purple.

Species over 30, all African; 10 species in South Africa extending from the Transvaal, Swaziland, Zululand, Basutoland, Natal, the Orange Free State to the Alexandria district; also recorded from Griqualand West and South West Africa. (Type: *R. hirsuta* (E. Mey.) Dyer = *R. divaricata* Harv.)

6752 7. MICROLOMA R. Br., in Mem. Werner. Soc., vol. 1, p. 53 (1809)

Calyx usually divided almost to the base, more rarely with a saucer-shaped tube, glabrous or hairy; lobes 5, from much shorter than the corolla-tube to longer than the corolla itself, ovate-lanceolate, lanceolate, linear-lanceolate or lanceolate-linear, sometimes with scales at the base within. *Corolla* normally longer than the calyx, glabrous or hairy, sometimes waxy; tube urceolate or oblong in outline, rarely cylindric, often 5-angled, furnished within with 5 tufts of deflexed hairs usually situated low down in the tube and opposite the lobes; lobes 5, shorter than the tube, ovate, obovate, suborbicular and flat or narrow and somewhat tooth-like and channelled, spirally arranged and more or less closing the mouth of the tube. *Corona* 0 or of 5 small tubercles or fleshy scales at the middle or near the apex of the corolla-tube and alternating with the hairy tufts. *Staminal-column* arising from the base of the corolla; anthers sagittate at the base, often with erect membranous appendages which are sometimes hairy and more or less connate at their tips; pollen-masses linear, solitary in each theca, pendulous, attached to pollen-carriers by short caudicles. *Follicles* solitary by abortion, fusiform, beaked. *Seeds* obovate, oblong, or sometimes hoof-shaped, often concave and with a single rib on one side, tuberculate; embryo straight; cotyledons flat, elliptic or oblong; radicle terete, longer or shorter than the cotyledons; endosperm copious or scanty, fleshy.

Perennial, with slender twining stems or dwarf much-branched shrublets, with the branchlets modified into thorns, glabrous or hairy; leaves opposite, usually sessile, simple, long-linear or almost filiform, sometimes sparsely developed, rarely oblong or ovate, and somewhat fleshy; inflorescence a small umbel-like cyme, subaxillary; flowers usually reddish.

Endemic; species about 12, found in the coastal districts from Namaqualand to the Port Elizabeth district, also recorded from the Fauresmith district in the Orange Free State and from South West Africa. (Type: *M. sagittatum* (Linn.) R. Br.)

6758 8. ASTEPHANUS R. Br., in Mem. Werner. Soc., vol. 1, p. 54 (1809)

Calyx divided almost to the base or with a saucer-like tube; segments or sepals 5, lanceolate to oblong-lanceolate, without scales at the base within, glabrous. *Corolla-tube* campanulate, longer than the sepals, sometimes angled, with 5 hairy patches low down inside the tube; lobes 5, shorter or as long as the tube, oblong, obtuse. *Corona* 0. *Staminal-column* arising near the base of the corolla-tube; anthers with short erect membranous ovate appendages, not or shortly spurred at the base; pollen masses oblong, solitary in each anther-theca, attached to the pollen-carriers by very short caudicles. *Style* longer than the anthers, sometimes as long as the corolla-tube or reaching the tips of the corolla-lobes. *Follicle* solitary, terete-fusiform, tapering to a beak. *Seed* crowned with a tuft of hairs.

Slender twiners; leaves opposite, petioled, simple, elliptic, lanceolate, linear, oblong, or ovate, entire; inflorescence a small subaxillary umbel.

Species about 30, natives of Africa, tropical and subtropical America; 3 species found in South Africa, extending in the coastal districts from the Clanwilliam to the East London district; also recorded from the Somerset East district and South West Africa.

6762 9. PARAPODIUM E. Mey., Comm. Pl. Afr. Austr., p. 221 (1837)

Calyx divided almost to the base; lobes almost as long as the corolla-tube to almost as long as the corolla itself, lanceolate or ovate-lanceolate, with

scales within at the base. *Corolla-tube* shortly campanulate; lobes longer than the tube, recurved or spreading at the tips, oblong or ovate-oblong. *Corona-lobes* 5, as broad as long or obcordate, slightly projecting beyond the mouth of the corolla-tube, adnate to the corolla-tube in the basal portion, free above, quite free from the staminal-column. *Stamens* 5, united to the dilated part of the style to form a column; anthers with membranous ovate apical appendages; pollen-masses solitary and pendulous in each anther-theca, attached by caudicles almost as long as the pollen-masses themselves to pollen-carriers, oblong, tapering upwards. *Style-apex* exerted beyond the anther-appendages or shorter and depressed at the apex. *Follicles* large, coriaceous, covered with a few scattered protuberances. *Seed* elliptic in outline, concave-convex, with prominent ridges; embryo straight; cotyledons flat, elliptic; radicle terete, shorter than the cotyledons; endosperm scanty.

Erect herbs from thickened root-stocks; leaves often leathery, opposite, petioled or subsessile, simple, long-oblong, broadly-linear, ovate-oblong or ovate, entire, sometimes with undulate margins; inflorescence a lateral umbel; flowers greenish yellow.

Endemic; species 3, extending from the Transvaal and Basutoland to the Aliwal North district, parts of the Orange Free State, and to the Queenstown district. (Type: *P. costatum* E. Mey.)

6777 10. XYSMALOBIMUM R. Br., in Mem. Werner. Soc., vol. 1, p. 38 (1809)

Calyx divided to base; sepals 5, lanceolate or ovate-lanceolate, sometimes with scales within at the base, sometimes hairy. *Corolla* 5-lobed nearly to the base, erect, spreading, or strongly reflexed, usually oblong, rarely densely ciliate and clothed with thick hairs in the upper part. *Corona-lobes* 5, arising from the staminal-column, variable in shape, very thick and fleshy, as thick as broad, or laterally compressed, or dorsally flattened, always solid, sometimes bifid or obscurely 3-lobed, keelless or with one longitudinal median keel on the inner face, never cucullate or complicate, or with any filiform horn or long tongue-like process on the inner face. *Staminal-column* arising from the base of the corolla; anthers terminated by a membranous ovate or transversely oblong appendage, rarely spurred at the base; pollen-masses solitary and pendulous in each anther-theca, lanceolate or ovate or straight on one edge and rounded on the other, attached in pairs to the pollen-carriers by caudicles which are shorter than the pollen-masses which are sometimes flattened. *Follicles* variable in shape, smooth or more or less covered with soft bristle-like processes. *Seed* oblong, convex on one side, with a wide deep depression on the other side which is surrounded by a definite rim and tuberculed, crowned with a tuft of hairs; embryo straight; cotyledons flat, elliptic; radicle terete, shorter than the cotyledons; endosperm scanty.

Perennial herbs with milky juice, with a tuberous rootstock or a cluster of thick fleshy fusiform roots; stems erect or decumbent, simple or branched at the base, sometimes solitary; leaves opposite, often sessile, simple, linear-oblong, linear, ovate, lanceolate, or oblong, sometimes acuminate, entire, sometimes with undulate margins; inflorescence an umbel; umbels few or many, lateral at the nodes, with 1 or 2 terminal, sessile or pedunculate, or solitary and terminal on a long peduncle; flowers cream, greenish, or brown.

An African genus of about 40 species; 18 species in South Africa, mostly eastern but fairly generally distributed, recorded from the Transvaal, Zululand, Natal, Basutoland, and the Orange Free State, apparently absent from the south-western districts north of Paarl. (Type: *X. undulatum* (Linn.) R. Br.)

6778 **11. SCHIZOGLOSSUM** E. Mey., *Comm. Pl. Afr. Austr.*, p. 218 (1837)

Calyx 5-partite; lobes usually linear or linear-lanceolate, sometimes with scales at the base within, often hairy. *Corolla* lobed nearly to the base; lobes usually elliptic-oblong, flat, rarely concave on the back. *Corona* of 5 lobes from the staminal-column; lobes about as long as to twice as long as the staminal-column, erect, dorsally flattened, usually thin (at least in dried flowers), rarely very thick and fleshy, narrowly oblong, ovate, cuneate-obovate, suborbicular, or obcordate, entire or notched or 2—3-lobed, frequently tapering into a subulate point or sometimes into 2 appendages, never complicate, but sometimes with slightly infolded margins, often with an appendage and with 2 keels on the inner face, rarely without keels or appendages or both; appendages sometimes hardly exceeding the lobe or long and subterminal or bifid or trifid or divided to the base into 2—3-lobes. *Staminal-column* arising from the base of the corolla, united above with the dilated part of the style; anthers with membranous orbicular suborbicular subreniform or ovate appendages which are inflexed over the top of the style or more rarely erect; pollen-masses oblong, linear-oblong, linear, or sometimes sausage-shaped, sometimes hooked near the apex, attached to the pollen-carrier by caudicles which are shorter than the pollen-masses themselves. *Style-apex* usually depressed-truncate, more rarely with 5 tubercles or short lobes or obtusely conical. *Follicle* usually solitary by abortion, narrowly fusiform, beaked, smooth or covered with minute processes. *Seed* flat or convex on one side and flat on the other, elliptic-obovate in outline, usually with ridges, crowned with a tuft of hairs; embryo straight; cotyledons flat, elliptic; radicle terete, shorter than the cotyledons; endosperm scanty.

Perennial herbs with a tuberous rootstock or a cluster of thick fleshy roots, erect or rarely decumbent, with usually slender stems; leaves opposite, alternate, or whorled, sessile or shortly petioled, varying from almost filiform to elliptic and ovate, sometimes hastate or cordate at the base, entire, glabrous or hairy; inflorescence a pedunculate or sessile umbel, lateral at the nodes and terminal; flowers often small, greenish, dark brown, red, purple, white, or yellow, with the apex of the style often pink.

An African genus of about 120 species; 90 species recorded from South Africa, chiefly massed in the eastern districts, Natal, the Transvaal, Basutoland, and the eastern Orange Free State and extend to the Tulbagh district; rare in the central districts. (Type: *S. atropurpureum* E. Mey.)

6779 **12. FANNINIA** Harv., *Gen. S. Afr. Pl.*, ed. 2, p. 235 (1868)

Calyx 5-partite; segments $\frac{3}{4}$ as long as the corolla, linear-lanceolate, acuminate, with scales within at the base, pilose. *Corolla* lobed nearly to the base; lobes oblong-elliptic, pilose. *Corona* $\frac{3}{4}$ as long as the corolla-lobes, consisting of 5 lobes arising from the staminal-column; lobes linear-oblong, flat, slightly depressed at the apex, with a distinct midrib and with 2 erect lobules arising from near the base. *Stamens* connate in a tube round the ovary; anthers united to the style, with fringed membranous appendages decumbent on the style-apex; pollen-masses solitary and pendulous in each anther-thecae, ovate, attached to the pollen-carriers by short abruptly curved caudicles which are dilated in the basal half. *Style-apex* depressed-truncate, 5-angled.

Herb, with a tuberous rootstock; leaves opposite, simple, shortly petioled or subsessile, lanceolate, elliptic, or oblong, entire, pubescent; inflorescence a terminal umbel; flowers with a white corolla and purple corona-lobes.

Endemic; species 1, extending from Natal to the East London district. (Type: *F. caloglossa* Harv.)

6780 13. KANAHIA R. Br., in Mem. Werner. Soc., vol. 1, p. 39 (1809)

Calyx 5-partite; segments ovate or lanceolate, acuminate, with a row of scales within at the base. *Corolla* lobed to half-way down or nearly to the base; lobes 5, ascending, spreading, or erect, slightly overlapping to the left in bud, elliptic, ciliate and with the upper surface bordered with woolly hairs, pubescent within. *Corona* of 5 lobes arising from the staminal-column, more or less complicate or fissured on the inner face, projected into 2 short horns directed over and slightly overtopping the staminal-column. *Staminal-column* arising from the base of the corolla; anthers with membranous transversely oblong appendages which are decumbent on the style-apex, bluntly spurred at the base; pollen-masses terete, more or less oblong in outline, attached to the pollen-carriers by short horizontal caudicles. *Style-apex* slightly raised and button-like, with 5 radiating ridges. *Follicles* usually one or none developed from an inflorescence, more or less ellipsoid, rounded and smooth on the outer side, grooved on the inner side, obtuse or apiculate. *Seed* rounded on one side and concave on the other, tapering to the end, with a tuft of fine hairs; embryo straight; cotyledons flat, elliptic; radicle cylindric, longer than the cotyledons.

Plants tufted from a perennial rootstock; stems simple, rarely branched above; leaves ascending, opposite, subsessile, simple, lanceolate, linear-lanceolate, or linear, entire, with minute bristles in the leaf-axils; inflorescence a pseudo-umbel, lateral at the nodes, with the peduncles racemously scattered along the upper part of the branches; flowers greenish.

Species 4, all African, with 1 species extending to Arabia; 1 species found in the northern Transvaal. (Type: *K. laniflora* (Forsk.) R. Br.)

6783 14. CORDYLOGYNE E. Mey., Comm. Pl. Afr., Austr. p. 218 (1837)

Calyx 5-partite; segments lanceolate, with scales at the base within. *Corolla* 5-lobed nearly to the base; lobes oblong. *Corona* of 5 free lobes arising from the base of the staminal-column; lobes erect, spatulate-hastate or oblong-linear, with a minute tooth on each side at the middle and with 2 keels and a transverse ridge or flap on the inner face, without any processes alternating with them at the base. *Staminal-column* arising from the base of the corolla, cylindric, not contracted at the apex or base; anthers with membranous erect deeply concave appendages; pollen-masses pendulous and solitary in each anther-theca, oblong-linear, attached by slender caudicles almost as long as themselves to minute pollen-carriers. *Style* produced above the anther-appendages into a club-shaped structure. *Follicles* narrowly fusiform. *Seed* brown, flattened, ovate, with a narrow marginal wing; embryo straight; cotyledons flat, elliptic; radicle semi-terete, as long as the cotyledons; endosperm scanty.

Perennial erect herb, found in damp or marshy places, with a thickened rootstock; leaves opposite, sessile, simple, linear to almost filiform; inflorescence a peduncled globose umbel, usually solitary or sometimes 2—4 to a stem; flowers yellow, yellowish-brown, to brown.

Endemic; species 1, recorded from the Transvaal, Basutoland, Natal, the eastern Orange Free State, Griqualand West, and from the Hanover, Queenstown, Colesberg, Graaff Reinet, and Middelburg districts. (Type: *C. globosa* E. Mey.)

6783a 15. PERIGLOSSUM Decne., in DC. Prodr., vol. 8, p. 520 (1844) *ex parte*

Calyx 5-partite; segments lanceolate or ovate-lanceolate, often with scales within at the base. *Corolla* lobed nearly to the base; lobes 5, oblong-linear,

oblong, or ovate-oblong, sometimes hook-pointed. *Corona* of 5 lobes arising from the base of the staminal-column, sometimes almost as long as the corolla-lobes; lobes shortly connate at the base, erect, spatulate-oblong, spatulate-sagittate, or oblong-linear, with a transverse ridge or flap and often 2-keeled on the inner face, sometimes reflexed at the apex, sometimes with a filiform process alternating with them at the base or the process rudimentary or absent. *Staminal-column* arising from the base of the corolla; anthers terminated by membranous ovate obtuse appendages which are decumbent on the style-apex; pollen-masses solitary and pendulous in each anther-theca, sausage-shaped, curved, attached to a pollen-carrier by caudicles which are at least twice as long as the pollen-masses; caudicles doubly curved. *Follicles* narrow-fusiform, tapering into a beak. *Seed* concave on one side, convex on the other, with short protuberances and a distinct pleated rim round the concave surface; embryo straight; cotyledons flat, elliptic; radicle terete, shorter than the cotyledons; endosperm fleshy, copious.

Perennial erect herbs, with solitary simple stems from a tuber; leaves opposite, sessile simple, linear to almost filiform; inflorescence a pedunculate globose 6- to many-flowered umbel, arranged 2—4 together racemously along the upper part of the stem; flowers yellowish brown, dark yellow, red-brown, greenish.

Endemic; species 4, perhaps 5, found in the Transvaal, Natal, Basutoland, eastern Orange Free State to the Komgha district; also recorded from Ngamiland. (Type: *P. angustifolium* Decne.)

6785 16. EUSTEGIA R. Br., Mem. Werner. Soc., vol. 1, p. 51 (1809)

Calyx 5-partite, sometimes with scales within at the base. *Corolla* deeply 5-lobed; lobes oblong-lanceolate. *Corona* overtopping the style-apex or about as long, consisting of 3 series of membranous erect lobes arising from the base of the staminal-column; lobes of outer series 5, opposite the corolla-lobes, oblong or linear and broadened at the base, erect, entire or shortly bifid; lobes of middle series subsimple and linear or deeply divided almost to the base into 3 linear segments alternating with the corolla-lobes; lobes of inner series 5, linear, entire, alternating with the corolla-lobes. *Anthers* with membranous ovate appendages; pollen-masses solitary and pendulous in each anther-theca, ovate-oblong, attached to caudicles as long as themselves; pollen-carriers with a small translucent appendage on either side.

Small tuberous-rooted perennials, branching at ground level into many decumbent or ascending stems; leaves small, opposite, simple, sessile or subsessile, linear-filiform to linear-hastate, rarely elliptic; inflorescence a peduncled umbel, lateral at the nodes; flowers green.

Endemic; species 5, extending from Namaqualand to the Riversdale district. (Type: *E. minuta* (Linn.) R. Br.)

6787 17. KREBSIA Harv., Gen. S. Afr. Pl., ed. 2, p. 233 (1868)

Calyx 5-partite; segments linear-lanceolate to lanceolate, with scales within at the base. *Corolla-tube* shallowly basin-shaped; lobes 5, ovate-oblong, recurved at the tips and sometimes notched at the apex. *Corona-lobes* 5, arising at or near the base of the staminal-column, exceeding the corolla-lobes, simple, erect, narrowly elliptic or lanceolate, keeled all down the back and more or less acutely triquetrous in cross-section, with a rhomboid wing-like dilation on the back at the base, tapering above into an acute incurved-hooked apex, without an appendage on the inner face. *Anthers* with a membranous ovate appendage; pollen-masses solitary and pendulous in each anther-theca, oblong or oblong-ovate; caudicles shorter than the

pollen-masses. *Style-apex* slightly projecting above the staminal-column, depressed-truncate, with 5 short thick fleshy lobes. *Follicles* not seen.

Perennial herbs from a thickened rootstock; leaves opposite, shortly petioled, simple, linear, entire, inflorescence of very shortly pedunculate subglobose umbels lateral at the nodes; corolla-lobes green without, white within and corona-lobes purplish.

Endemic; species 2, recorded from the Transvaal, Natal, Basutoland, the Transkei, and the Aliwal North and Queenstown districts. (Type: *K. stenoglossa* Schltr.)

6787a 18. PACHYCARPUS E. Mey., Comm. Pl. Afr. Austr., p. 209 (1837)

Calyx 5-partite; segments ovate, lanceolate, or linear-lanceolate, sometimes acuminate, usually with scales within at the base, often pilose, usually ciliate. *Corolla* usually deeply lobed, sometimes with a broadly campanulate tube; lobes 5, ovate, broadly elliptic, or obovate. *Corona* of 5 lobes arising at or near the base of the staminal-column, dorsally flattened, shorter, as long as, or longer than, the staminal-column, sometimes almost as long as the corolla-lobes, erect or deflexed, often bending over the style-apex, often shortly and thickly stalked, spatulate, oblong-spatulate, broadly and transversely ovate, obovate, transversely oblong, cordate, oblong, linear-oblong, sometimes bluntly 3-lobed or produced into a broad linear lobe, usually with two prominent flaps or wings on the inner face, more rarely attached by a broad foot to the staminal-column and consisting of two fleshy keels separated by a deep narrow fissure. *Anthers* with usually membranous ovate or broadly elliptic appendages, which usually lie over the style-apex; pollen-masses oblong or ovate-oblong, solitary and pendulous in each anther-theca; caudicles usually shorter than the pollen-masses, often dilated. *Style-apex* crater-like, depressed-truncate, a fleshy disc, or basin-shaped, usually with 5 short thick fleshy lobes or a fleshy rim, more rarely dome-like surrounded by a fleshy rim. *Follicles* in all specimens seen solitary, stoutly fusiform or ovoid-fusiform, obtuse, winged at least in the upper part, sometimes toothed or echinate along the wings. *Seed* brown, oblong in outline, convex on back, concave on the face and the concavity with a thickened margin, covered with short protuberances; embryo straight; cotyledons flat, elliptic; radicle shorter than the cotyledons; endosperm scanty.

Erect perennial herbs usually with a tuberous rootstock or of thick fleshy roots; leaves opposite, simple, petioled or sessile, oblong, ovate-oblong, lanceolate, elliptic, ovate, more rarely linear, sometimes acuminate, entire, usually distinctly penninerved, sometimes hairy or scabrid; inflorescence a 2- to several-flowered umbel, lateral at the upper nodes and terminal or flowers in pairs; flowers of moderate or large size, brownish, creamy-white, yellowish purple, yellow, white, yellow-brown, sometimes mottled.

An African genus of about 30 species; 26 species in South Africa, recorded from the Transvaal, Swaziland, Zululand, Basutoland, Natal, the eastern Orange Free State, and the eastern districts, rare in the south-western and central districts but extend to the Swellendam district. (Type: *P. grandiflorus* (Linn. f.) E. Mey.)

6790 19. WOODIA Schltr., in Engl. Bot. Jahrb., vol. 18, Beibl. No. 45, p. 30 (1894)

Calyx 5-partite; segments sometimes almost as long as the corolla, linear-lanceolate, with scales within at the base. *Corolla* 5-lobed nearly to the base; lobes oblong or ovate, subacuminate, with revolute margins. *Corona-lobes* 5, arising from the base of the staminal-column, dorsally flattened, deeply 3-lobed, with the lobes more or less similar and ovate-oblong or the

side lobes linear-oblong and the middle lobe curved; the middle lobe usually curved. *Anthers* with a membranous usually half-moon appendage; pollen-masses solitary and pendulous in each anther-theca, ovate or somewhat quadrate, caudicles shorter than the pollen-masses, sometimes dilated; pollen-carriers with narrow membranous wings. *Style-apex* flat, 5-angled. *Follicles*, where known, covered with short spine-like processes.

Perennial herbs, probably with a tuberous rootstock; stem usually solitary, erect, rarely branched; leaves opposite, shortly petioled, simple, lanceolate, ovate, or linear-lanceolate, entire, sometimes undulate, penninerved; inflorescence a sessile or peduncled umbel, lateral at the nodes and terminal.

Endemic; species 3, extending from the Transvaal and Natal to the Humansdorp district; also recorded from the Somerset East and Queenstown districts. (Type: *W. verruculosa* Schltr.)

6791 20. ASCLEPIAS Linn., Sp. Pl., ed. 1, p. 214 (1753)

Calyx 5-partite; segments linear, lanceolate, ovate, or ovate-elliptic, usually with scales within at the base, frequently ciliate, frequently hairy. *Corolla* 5-lobed nearly to the base; lobes lanceolate, elliptic, or ovate, often reflexed, often hairy. *Corona* of 5 lobes arising at or above the base of the staminal-column, from shorter than the staminal-column to almost as long as the corolla-lobes; lobes very rarely (in *A. eminens* Schltr.) connate at the base, erect or radiating, laterally compressed, cucullate or compressed-cucullate, or with a fissure down the inner face, rarely produced into a long reflexed horn or with a truncate lobe at the base, with or without a horn (or 2 horns), tooth, flap, keel, or other process within the cavity, sometimes hairy within the cavity. *Anthers* with terminal membranous ovate obovate or spatulate appendages which are decumbent on the style-apex or erect and sometimes twice as long as the staminal-column. *Pollen-masses* solitary and pendulous in each anther-theca, oblong, ovate, or triangular, often narrowing above; caudicles shorter than the pollen-masses. *Style-apex* depressed, disc-like, shallowly boat-shaped, or depressed-truncate, usually with 5 short fleshy thick lobes. *Follicle* solitary, rarely follicles in pairs, globose to narrowly fusiform, usually beaked, smooth, winged, or more or less covered with subulate processes or tubercules. *Seed* brownish, oblong, convex on the back and concave on the face, or flattened and narrowly winged, usually covered with small protuberances; embryo straight; cotyledons flat, elliptic; radicle shorter than the cotyledons or almost as long; endosperm scanty.

Perennial herbs or small shrubs with erect or decumbent simple or branched stems, often from a deep tap-root or woody rootstock; leaves opposite or whorled, usually sessile, simple, varying from almost filiform to broadly elliptic, sometimes cordate or hastate at the base, glabrous or hairy; inflorescence of pedunculate or more rarely sessile umbels, lateral at the nodes or terminal or both; flowers usually of moderate size, white, greenish-white, yellow, mauve, pink, cream, or reddish brown.

Species about 150, distributed throughout Africa and the warmer parts of North and South America, with 2 species in the Orient and Arabia; about 60 species in South Africa, widely distributed. (Type: *A. syriaca* Linn.)

NOTE.—In a specimen of *A. filiformis* Bth. (Bolus 640) I found 1 seed with 3 cotyledons.—E. P. P.

6810 21. PENTARRHINUM E. Mey., Comm. Pl. Afr. Austr., p. 199 (1837)

Sepals lanceolate-oblong, with scales within at the base. *Corolla* deeply 5-lobed; lobes elliptic. *Corona* of 5 lobes arising from the base of the staminal-column; lobes, when viewed from the side, obconic, trumpet-shaped, or slipper-shaped, with infolded margins, forming a channel or a

narrow funnel-shaped cavity within, truncate or rounded at the apex, with a horn directed forwards over or towards the anthers. *Staminal-column* arising from the base of the corolla; anthers with a membranous ovate appendage which is inflexed over the apex of the style; pollen-masses terete, linear in outline, pendulous and solitary in each anther-theca; caudicles shorter than the pollen-masses. *Follicles* lanceolate in outline, more or less beaked, more or less echinate. *Seeds* brown, ovate in outline, plano-convex, narrowly winged, with scattered raised markings; embryo straight; cotyledons flat, elliptic; radicle shorter than the cotyledons; endosperm scanty.

Perennial twining herbs; stems slender; leaves opposite, petioled, ovate, cordate at the base, entire; inflorescence in pedunculate umbel-like cymes; lateral at the nodes.

An African genus of 3 species; 2 species in South Africa, extending from the Transvaal and Natal to the Uitenhage district; recorded also from some central districts, from the Vryburg and Hay districts, Ngamiland and South West Africa. (Type: *P. insipidum* E. Mey.)

6834 22. CYNANCHUM Linn., Sp. Pl., ed. 1, p. 212 (1753)

Calyx 5-partite; segments ovate, ovate-lanceolate, sometimes acuminate, often with scales within at the base. *Corolla* very deeply 5-lobed; lobes oblong-elliptic, ovate, or lanceolate, sometimes acuminate. *Corona* varying from as long as the staminal-column to as long as the corolla-lobes, arising from the staminal-column near or at its base, either annular, cup-shaped, or tubular, truncate, toothed, or lobed at the top, or divided nearly or quite to the base into 5 entire or toothed lobes, with or without a tooth or lobe or a thickening or keels within the tube or at the base of the lobes when the corona is divided. *Staminal-column* arising at or near the base of the corolla. *Anthers* with a membranous oblong-obovate or lanceolate appendage which is inflexed or connivent over the style-apex or erect around it; sometimes appendage linear with a membranous margin; pollen-masses pendulous and solitary in each anther-theca, ellipsoid or oblong or ovate in outline; caudicles shorter than the pollen-masses. *Style-apex* sometimes projecting beyond the staminal-column as a short cone, sometimes faintly 2-lobed, often a 5-lobed disc with a central short dome or cone. *Follicles* sometimes winged or keeled, smooth or setose. *Seeds* compressed, elliptic and narrowly winged or convex on one side and flat on the other, rough or with short protuberances; embryo straight; cotyledons flat, elliptic; radicle shorter than the cotyledons; endosperm scanty.

Stems usually twining, sometimes erect or decumbent, rarely somewhat succulent and with the leaves undeveloped; leaves opposite, usually petioled, simple, ovate, suborbicular, or elliptic, more rarely linear, entire, sometimes acuminate or apiculate, sometimes cordate at the base; inflorescence fasciculate or in pedunculate simple umbel-like or compound and corymbose cymes, rarely in racemes, sub-axillary or lateral at the nodes; flowers white or cream.

Species about 100 cosmopolitan; 13 species in South Africa, fairly widely distributed. (Type: *C. acutum* Linn.)

6842 23. GLOSSOSTEPHANUS E. Mey., Comm. Pl. Afr. Austr., p. 217 (1837)

Calyx 5-partite; segments lanceolate. *Corolla-tube* shallowly campanulate; lobes 5, suberect, linear. *Corona* about as long as the staminal-column; lobes 5, free, erect, linear in outline, laterally compressed, grooved down the back. *Anthers* with membranous ovate appendages; pollen-masses minute, caudicles shorter than the pollen-masses. *Style* produced into a thick column which tapers upwards and is as long as the corolla and minutely 2-lobed at

the apex. *Follicle* solitary, narrowly fusiform, long attenuate. *Seed* brown, linear-lanceolate in outline, convex on the back, concave on the face, narrowly winged, smooth or with scattered irregular ridges; embryo straight; cotyledons flat, linear-oblong; radicle shorter than the cotyledons; endosperm copious.

A perennial herb with slender twining stems; leaves opposite, shortly petioled, linear or narrowly linear-lanceolate; inflorescence a lax cyme or raceme, lateral at the nodes.

Endemic; species 1, extending from the Malmesbury to the Uitenhage district. (Type: *G. linearis* (Linn.) E. Mey.)

6849 24. **SARCOSTEMMA** R. Br., in Mem. Werner. Soc., vol. 1, p. 50
(1809)

Calyx 5-partite; segments oblong, with scales at the base within. *Corolla* lobed nearly to the base; lobes oblong or oblong-elliptic. *Corona* double, arising from the filament part of the staminal-column; outer corona annular, cup-shaped, or basin-shaped, 5-angled, truncate or shortly lobed; inner corona of 5 fleshy compressed or keeled lobes, embraced at the base by the outer corona, adnate to the staminal-column for almost the whole of their length. *Anthers* with membranous ovate appendages which are inflexed over the style-apex or are ascending and surrounding it; pollen-masses pendulous and solitary in each anther-theca, ovate; caudicles shorter than the pollen-masses. *Follicles* narrowly fusiform, usually bluntly beaked, often with irregular skin-like membranes on the surface. *Seed* compressed, ovate, narrowly winged, smooth; embryo straight; cotyledons flat, elliptic; radicle compressed, as long as the cotyledons; endosperm scanty.

Stems subsucculent, terete, trailing or twining; leaves undeveloped; inflorescence a terminal or lateral sessile umbel; flowers yellow, white, or greenish white.

Species few, found in the dry parts of the tropical and subtropical regions of the Old World; 1 species in South Africa, extending from the Transvaal, Natal, Basutoland, and the Orange Free State to the Robertson district; also recorded from many of the central districts, Griqualand West, South West Africa, Namaqualand to the Van Rhynsdorp district. (Type: *E. viminale* (Linn.) R. Br.)

6860 25. **SECAMONE** R. Br., in Mem. Werner. Soc., vol. 1, p. 55
(1809)

Calyx 5-partite; segments ovate to almost suborbicular, with scales within at the base. *Corolla* sometimes leathery, divided almost to the base or with a shallowly campanulate tube, sometimes with a flap in the mouth of the tube alternating with the lobes, sometimes hairy in the mouth; lobes 5, oblong, usually with fleshy submarginal ridges and often with a central ridge all of which are decurrent on the tube within, sometimes hirsute on the face. *Corona* of 5 simple lobes arising from and more or less adnate to the staminal-column; lobes usually laterally compressed and curved inwards, sometimes small. *Anthers* with membranous fimbriate appendages which are sometimes connate; pollen-masses 2 in each anther-theca, erect; caudicles almost obsolete; pollen-carriers soft, white, usually larger than the pollen-masses. *Style* sometimes produced beyond the staminal-column into 2 fleshy lobes, sometimes discoid and not produced. *Follicles* sometimes large, fusiform or narrowly cylindric, often acuminate. *Seed* brown, compressed, lanceolate or linear in outline, biconvex or convex-concave, with a single rib on one side, sometimes pubescent, with a tuft of hairs; embryo straight; cotyledons flat, lanceolate or linear-lanceolate; radicle cylindric, as long as or almost as long as the cotyledons; endosperm copious.

Climbing shrubs; leaves opposite, simple, sessile or subsessile, lanceolate, obovate, oblanceolate, elliptic, ovate, or linear, sometimes apiculate, entire; inflorescence a 2- to many-flowered cyme, axillary and terminal, rarely flowers solitary; flowers green, cream, or yellowish.

Species about 100, natives of the hotter regions of the Old World; frequent in Madagascar; 5 species in South Africa extending from the Transvaal, Swaziland, Zululand, and Natal through the coastal districts to the Clanwilliam district; also recorded from the Somerset East, Queenstown, and Calvinia districts. (Type: *S. emetica* R. Br.)

6861

26. *SISYRANTHUS* E. Mey., Comm. Pl. Afr. Austr., p. 197 (1837)

Calyx 5-partite; lobes ovate or lanceolate, often acuminate. *Corolla-tube* urceolate or campanulate, sometimes with ridges on the inner surface which alternate with the lobes; glabrous or more often bearded with hairs in the mouth or with 5 small tufts of hair in the throat; lobes 5, shorter or almost as long as the tube, oblong or ovate, glabrous or with hairs on the face. *Corona* as long as or longer than the staminal-column; lobes 5, arising from the staminal-column and partly adnate to it, with their sides and upper part free, ovate, deltoid-ovate, oblong, rhomboid, or broadly cuneate, obtuse or acute, entire or 3-toothed with the lateral teeth small and the middle tooth large or prolonged into a subulate or filiform point and erect or incurved or connivent. *Anthers* with membranous margins at the apex; pollen-masses solitary and erect in each anther-theca, terete, linear or oblong in outline, sometimes curved, often pellucid on the inner edge; caudicles shorter than the pollen-masses. *Style-apex* depressed-truncate or crater-like, often 5-angled. *Follicles* rather slender, narrowly fusiform, tapering into a beak, smooth. *Seeds* crowned with a tuft of hairs.

Erect herbs; rootstock a cluster of long fleshy roots; stem rather slender, usually simple; leaves opposite, sessile, simple, long linear, in distant pairs; those of the lowest 2-4 nodes very much reduced or rudimentary and closely adpressed to the stem; inflorescence an umbel, sometimes 2-flowered, pedunculate or subsessile, lateral or terminal; flowers cream.

Endemic; species 11, extending from the Transvaal, Swaziland, Zululand, Natal, the eastern Orange Free State to the Bathurst district. (Type: *S. virgatus* E. Mey.)

6862

27. *ORTHANTHERA* Wight, Contrib. Bot. India, p. 48 (1834)

Calyx 5-partite; segments lanceolate, with scales within at the base, hairy. *Corolla-tube* globose and 5-winged or 5-angled at the base, then cylindric or tubular, hairy without; lobes 5, shorter than the tube, linear, with reflexed margins, sometimes with minute pocket-like thickenings at the sinuses between them. *Corona* of 5 half-moon or transversely oblong lobes reflexed outwards or of V-shaped lobes, arising at or near the base of the staminal-column and almost as long as it. *Anthers* with a membranous subulate or lanceolate appendage; pollen-masses solitary and erect in each anther-theca, oblong in outline, with a pellucid patch at the tip; caudicles shorter than the pollen-masses. *Style-apex* discoid, 5-angled, with a projection from the centre. *Follicles* large, fusiform, acuminate, smooth. *Seed* brown, ovate, with a narrow marginal wing, convex on one face, flat on the other, with a terminal tuft of hairs; embryo straight; cotyledons flat, elliptic; radicle shorter than the cotyledons; endosperm scanty.

Herbaceous, with prostrate leafy stems or shrubby with erect parallel branches; leaves opposite, subsessile or shortly petioled, simple, linear, ovate, elliptic, or lanceolate, sometimes hastate at the base or rarely leaves not developed; inflorescence in pedunculate or subsessile umbels or clusters, lateral at the nodes; flowers white.

Species 3, natives of Africa and India; 2 species in South Africa found in the Transvaal, the north-western districts, the Kimberley district, Ngamiland, and South West Africa. (Type: *O. viminea* (Wall.) W. & A.)

6865 28. MACROPETALUM Burch. ex Decne, in DC. Prodr., vol. 8, p. 626 (1844)

Calyx-tube shortly basin-shaped; lobes 5, ovate, longer than the tube. *Corolla-tube* exceedingly short; lobes 5, long linear-filiform, reflexed straight back from their base. *Corona* longer than the staminal-column, of 5 simple lobes opposite the anthers, arising above the base of the staminal-column and adnate to it up to the base of the anthers, free above; lobes sometimes minutely 2—3-toothed at the apex. *Anthers* with an ovate erect membranous appendage; pollen-masses solitary and erect in each anther-theca, elliptic in outline; caudicles exceedingly short. *Style-apex* semi-globose. *Follicles* erect, slightly diverging, slender, smooth.

A perennial herb, with slender erect simple or branched stems from a tuber; leaves opposite, sessile, simple, linear-filiform; inflorescence of 2—4 flowers fascicled at the nodes.

Endemic; species 1, recorded from the Transvaal, the Orange Free State, and Bechuanaland. (Type: *M. burchellii* Decne.)

6868 29. ANISOTOMA Fenzl, in Linnaea, vol. 17, p. 330 (1843)

Sepals lanceolate, with scales at the base within, hirsute. *Corolla-tube* shallowly basin-shaped; lobes longer than the tube, reflexed, glabrous or hirsute on the face. *Corona* longer than the staminal-column, arising near or at the base of the staminal-column, really double but apparently of 5 dorsally flattened entire or denticulate or bifid lobes opposite the anthers (really outer corona-lobes) with a long appendage (really inner corona-lobes) on their inner face. *Staminal-column* arising from the base of the corolla; anthers without an appendage but with two or more hairs at their tips; pollen-masses oblong or ovate in outline, with a pellucid portion at the narrow end, erect and solitary in each anther-theca; caudicles shorter than the anther-theca. *Style-apex* depressed, truncate. *Follicles* narrowly fusiform, acuminate.

Perennial herbs; rootstock woody; stems several, prostrate; leaves opposite, petioled, cordate-ovate or cordate-orbicular; inflorescence in pedunculate or sessile umbel-like cymes.

Endemic; species 2, found in Natal and Basutoland and then in the coastal area to the Uitenhage district. (Type: *A. cordifolia* Fenzl)

6870 30. BRACHYSTELMA R. Br., in Bot. Mag., t. 2343 (1822)

(*Brachystelma* Schltr.; *Aulostephanus* Schltr.;
Siphonostelma Schltr.; *Blepharanthra* Schltr.)

Calyx 5-partite; segments lanceolate or long-linear, often with scales within at the base, often hairy. *Corolla-tube* campanulate, more rarely tubular or globose, sometimes very shallow, sometimes hairy or tubercular within; lobes longer or shorter than the tube, often long-linear, often with reflexed margins, sometimes with crenate margins, erect and sometimes connate at the tips or strongly reflexed. *Corona* arising from the staminal-column, double or falsely appearing 1-seriate, longer or shorter than the staminal-column, often hairy; outer corona frequently of distinct lobes which are either bifid or divided almost to the base, sometimes cup-like or saucer-shaped, with 5 or 10 teeth or lobes, more rarely reduced to cushion-like thickenings; inner corona-lobes opposite the anthers, usually linear or

oblong, erect or decumbent on the style-apex, rarely club-like structures. *Anthers* without an apical appendage; pollen-masses subglobose or oblong or suborbicular in outline, solitary and erect or horizontal in each anther-theca; caudicles much shorter than the pollen-masses. *Style-apex* usually small, usually a 5-angled disc. *Follicles* fusiform, smooth. *Seed* oblong, convex on one surface, concave or flat on the other, with a narrow marginal wing, crowned with a tuft of hairs; embryo straight; cotyledons flat, elliptic; radicle shorter than the cotyledons; endosperm scanty.

Perennial herbs, usually of dwarf habit; rootstock a tuber or cluster of thick fleshy roots; stem solitary or 2 to several to a tuber, simple or branched, erect, prostrate, or rarely twining; leaves opposite, sessile or petioled, lanceolate, oblong, ovate, elliptic, linear, sometimes toothed or crenate, sometimes hairy; inflorescence a terminal umbel or umbel-like cyme or flowers solitary or 2 or more together and lateral at the nodes; flowers dark purple, yellowish, crimson, chocolate, or white.

Species about 60, natives of Africa and India; over 40 species in South Africa, fairly widely distributed. (Type: *B. tuberosum* R. Br.)

6874 31. CEROPEGIA Linn., Sp. Pl., ed. 1, p. 211 (1753)

Calyx-segments linear, ovate, lanceolate, or lanceolate, sometimes acuminate. *Corolla-tube* normally inflated at the base, then contracted and tubular or cylindric, then dilated at the mouth, sometimes papillate or hairy within; lobes free or connate at their tips or connate to form an umbrella-like structure or connate to form a narrow column dilated at the apex into 5 plates, rarely free and pendulous, linear-oblong, lanceolate-oblong, oblong, or elliptic-lanceolate, often with the margins replicate, often ciliate and hairy. *Corona* in two series, longer or shorter than the staminal-column, sometimes hairy; outer corona of 5 lobes which are either entire, shortly bifid, or deeply divided, often cupular and truncate or cupular and toothed or lobed, sometimes of 5 small truncate pocket-like lobes; inner corona of 5 lobes, usually linear or linear-lanceolate or linear-spathulate or filiform, sometimes with dilated obtuse tips, usually longer than the staminal-column and incumbent over the style-apex. *Anthers* without appendages; pollen-masses ascending or subhorizontal, solitary in each anther-theca; caudicles shorter than the pollen-masses. *Style-apex* truncate or shortly conical. *Follicle* lanceolate in outline, very narrowly fusiform, sometimes acuminate, acute or obtuse, smooth or rugose. *Seed* obovate, narrowly winged, crowned with a tuft of hairs; embryo straight; cotyledons joined and bifid at the apex or free and elliptic; endosperm scanty.

Perennial herbs; rootstock a tuber or a cluster of thick fleshy roots, rarely with ordinary stout root-fibres; stems erect, twining, rambling, prostrate or pendulous, herbaceous or fleshy; leaves opposite, sessile or petioled, simple, sometimes fleshy linear, linear-filiform, ovate, ovate-lanceolate, lanceolate, or suborbicular, sometimes cuneate or subcordate at the base, sometimes not developed or reduced to scales; inflorescence umbel-like or rarely a raceme or flowers solitary or in pairs; flowers of moderate size or large, often variously mottled.

Species over 160, natives of Africa, the Mascarene Islands, the Malay Archipelago, and the hotter parts of Asia; over 40 species in South Africa, extending from the Transvaal and Natal to the Humansdorp district; also recorded from South West Africa. (Type: *C. candelabrum* Linn.)

6875 32. RIOCREUXIA Decne., in DC. Prodr., vol. 8, p. 640 (1844)

Calyx-segments lanceolate or lanceolate-linear, usually with scales within at the base. *Corolla-tube* usually broadly tubular and more or less inflated at the base; lobes more or less as long as the tube, linear or lanceolate, sometimes acuminate, connate at their tips. *Corona* 2—3-seriate, rarely 1-seriate,

arising from the staminal-column, as long as or longer or shorter than the staminal-column; outer corona a shallow 5-lobed basin-shaped structure or a 5-lobed collar, with the lobes shortly or deeply divided; inner corona-lobes 5, linear or subulate or shortly linear-oblong, incurved over the anthers, rarely obsolete. *Anthers* tipped with a very short fleshy appendage or apiculus; pollen-masses solitary and erect in each anther-theca, subglobose or ellipsoid; caudicles shorter than the pollen-masses. *Style-apex* depressed, truncate. *Follicles* terete, linear in outline or narrowly fusiform, acuminate, more or less beaded, smooth. *Seed* linear or oblong, convex on one side, flat on the other, winged, with a tuft of hairs; embryo straight, sometimes small in relation to the size of the seed; cotyledons lanceolate; radicle shorter than the cotyledons; endosperm scanty.

Perennials, with tuberous roots and annual twining stems; leaves opposite, petioled, simple, ovate, usually acuminate, cordate at the base; inflorescence a laxly branching cyme or flowers in fascicles at the 2—3 nodes of simple peduncle-like flowering axes, with or without another fascicle at their base, or all compactly fasciculate at the nodes of the stem; flowers brown, greenish white, pale yellow, or whitish.

An African genus of 9 species; 7 species in South Africa, extending from the Transvaal and Natal to the George, Knysna, and Humansdorp districts; also recorded from the Orange Free State, Swaziland, Basutoland, and the Aliwal North and Queenstown districts. (Type: *R. torulosa* (E. Mey.) Decne.)

6877 33. ECHIDNOPSIS Hook. f., Bot. Mag., t. 5930 (1871)

Calyx 5-partite. *Corolla* fleshy, rotate or rotate-campanulate, 5-lobed. *Corona* arising from the staminal-column; outer corona none or cupular or of 5 short lobes or pouches alternating with the anthers; inner corona of 5 fleshy lobes horizontally inflexed and incumbent on the backs of the anthers. *Staminal-column* arising from the base of the corolla, very short; anthers horizontally incumbent on the style-apex; pollen-masses solitary and horizontal in each anther-theca. *Style-apex* subtruncate.

Succulents, with rudimentary leaves; stems branching, stout, cylindric, several-angled; angles tessellately divided by impressed transverse lines into very obtuse and minutely apiculate tubercles, the apiculus being a rudimentary leaf; flowers small, in fascicles, sometimes solitary by abortion, along the grooves between the angles and mostly towards the apex of the stems.

Species about 8, natives of southern Arabia, Socotra, and Africa; 3 species in South Africa, recorded from the Van Rhynsdorp district and South West Africa. (Type: *E. cereiformis* Hook. fil.)

NOTE.—I have not seen specimens; the above description taken from the *Flora Tropical Africa*.—E. P. P.

6878 34. HOODIA Sweet, Hort. Brit., ed. 2, p. 359 (1830)

Sepals ovate or ovate-lanceolate, usually acuminate. *Corolla* large, flat, concave, or cup-shaped, with a very small proper tube just enclosing the corona, shortly and acutely 5-lobed or the lobes obsolete, glabrous or hairy, sometimes ciliate. *Corona* double, arising from the staminal-column; outer corona cup-shaped or saucer-shaped, 5-lobed, with the lobes entire or more or less divided; inner corona of 5 linear, or oblong, or trowel-shaped lobes incumbent on the anthers. *Anthers* without an apical appendage; pollen-masses solitary and erect or horizontal in each anther-theca; caudicles shorter than the pollen-masses. *Follicles* terete-fusiform, usually tapering to a beak, smooth. *Seed* oblong, with a narrow marginal wing, crowned with a tuft of hairs.

Stout succulent perennials bushily branched; stems 12—17-angled, tuberculate, with the tubercles spine- or bristle-toothed; leaves undeveloped; flowers light

yellow, pale buff, greenish yellow or shell-pink, large, showy, solitary or up to 9, arranged towards the ends of the stem.

An African genus of about 18 species; 17 species described from South Africa, found in South West Africa, Namaqualand, Bechuanaland, and several of the central and north-western districts of the Cape Province; one record from the Transvaal and coastal districts. (Type: *H. gordonii* (Masson) Sweet)

6878a 35. HOODIOPSIS Luckhoff, S. Afr. Gard., vol. 23, p. 231 (1933)

Calyx-segments ovate-lanceolate. *Corolla* with a shallow tube and 5 spreading lobes, densely papillate-asperate; lobes ovate, acuminate, with recurved edges. *Corona* double, arising from the staminal-column; outer corona of 5 erect-spreading entire lobes which are grooved down the inner face; inner corona 5-lobed, with each lobe divided to form 2 horns. *Staminal-column* arising from the base of the corolla-tube; anthers incumbent on the style.

A succulent perennial; stems erect, branching at the base, deeply 7—9-angled, with the angles raised into prominent compressed tubercles; leaves undeveloped; flowers reddish brown, solitary, arising about the middle of the stem.

Endemic; species 1, found in South West Africa. (Type: *H. triebneri* Luckhoff)

NOTE.—I have not seen specimens. The above description compiled from the original description.—E. P. P.

6879 36. TRICHOCAULON N. E. Br., Journ. Linn. Soc., vol. 17, p. 164 (1878)

Sepals usually ovate, acuminate. *Corolla-tube* campanulate or saucer-shaped, or corolla flattish, rarely with a raised ring on the disc, sometimes densely papillate; lobes 5, usually ovate and acuminate. *Corona* double, or sometimes the inner and outer coronas apparently belonging to the same series and composed of 5 shortly 3-lobed segments opposite the anthers; outer corona of 5 bipartite or bifid or emarginate segments, with the lobes of alternate pairs recurved to form a mandible-shaped structure, rarely with a process alternating with the lobes; inner corona of 5 linear or oblong lobes bending over and then erect above the staminal-column. *Staminal-column* arising from the base of the corolla; anthers without appendages; pollen-masses solitary and erect or subhorizontal in each anther-theca. *Follicles* fusiform, smooth. *Seeds* crowned with a tuft of hairs.

Succulent perennials; stems thick, cylindric, with many vertical series of conical or hexagonal tubercles which are tipped with a spine or a stout stiff bristle, or stems with crowded irregularly or spirally arranged short, rounded, pointless tubercles; leaves undeveloped; flowers rather small, arising between the tubercles at or towards the top or all over the stems, subsolitary or 2 or more together; flowers usually dark coloured.

Species about 28, natives of Africa and Madagascar; 27 species described from South Africa found in South West Africa, Namaqualand, Bechuanaland, the north-western and central districts of the Cape Province. (Type: *T. piliferum* (Linn. f.) Brown)

6880 37. TAVARESIA Welw., Bol. Cons. Ultr. Lieb., no. 7, p. 79 (1854)

Sepals ovate-lanceolate or lanceolate. *Corolla-tube* broadly tubular, somewhat widening at the mouth, sometimes papillate within; lobes 5, shorter than the tube, ovate, acuminate, with the sinuses between the lobes forming acute projecting angles. *Corona* double, arising from the staminal-column and longer than it; outer corona shortly tubular at the base, then produced into 10 long filiform segments each of which terminates in a large knob, usually with a minute tooth between the pairs of segments; inner corona of 5 linear or strap-shaped lobes which are incumbent upon the backs of the anthers. *Staminal-column* arising from the base of the corolla; anthers

without apical appendages; pollen-masses solitary and horizontal in each anther-theca; caudicles shorter than the pollen-masses. *Follicles* produced in pairs, somewhat diverging, narrowly lanceolate-fusiform, smooth. *Seeds* crowned with a tuft of hairs.

Succulent perennials, branching at the base; stems erect or ascending, 6—4-angled, with the angles tuberculate-toothed and each tubercle furnished with 3 bristles; flowers pale yellow and spotted with purple, 1—4 together at the base of the young stems.

An African genus of 3 species; 2 species in South Africa, recorded from South West Africa, Namaqualand, Bechuanaland, the Transvaal, the Orange Free State, and several of the north-western and central districts of the Cape Province. (Type: *T. angolensis* Welw.)

6881 38. PIARANTHUS R. Brown, Mem. Werner. Soc., vol. 1, p. 23 (1809)

Sepals longer or shorter than the corolla-tube, ovate or lanceolate, acuminate, with scales within at the base. *Corolla-tube* campanulate, cup-shaped, or saucer-shaped or corolla rotate and tube not evident, usually hairy on the inner surface; lobes ovate or lanceolate, subacuminate, often with revolute margins, usually hairy on inner face. *Corona* arising from the staminal-column, simple, of 5 lobes incumbent on the anthers; lobes sometimes toothed, rarely erect, with or without erect tips, dorsally produced or expanded into a truncate minutely tuberculate or denticulate crest. *Staminal-column* arising from the base of the corolla; anthers without apical appendages; pollen-masses ellipsoid, solitary and subhorizontal in each anther-theca; caudicles shorter than the pollen-masses. *Style-apex* a 5-lobed disc.

Dwarf succulent herbs; stems 4-angled, decumbent, creeping, or ascending; leaves not developed; flowers white or yellowish with purple spots or bands, solitary or in pairs or fasciated at the apex or middle of the stems.

Endemic; species 18, found in South West Africa, Namaqualand, the Van Rhynsdorp district and in several of the north-western and central districts of the Cape Province. (Type: *P. punctatus* (Masson) R. Brown)

6882 39. HUERNIOPSIS N. E. Br., Journ. Linn. Soc., vol. 17, p. 171 (1878)

Sepals ovate, acuminate, with scales within at the base. *Corolla-tube* campanulate; lobes 5, ovate, acuminate, with a few vibratile hairs on the margins near the base. *Corona* simple, longer than the staminal-column, connate into a basin at the base, with 5 oblong lobes which are adnate to the staminal-column at their base but free above. *Staminal-column* from the base of the corolla; anthers with truncate apices; pollen-masses solitary and erect or ascending in each anther-theca, ellipsoid, with a pellucid ridge on the inner margin; caudicles shorter than the pollen-masses. *Style-apex* truncate, 5-angled, depressed in the centre.

Dwarf herbs; stems succulent, decumbent, 4—5-angled; leaves not developed; flowers 2—4, arising from the base, middle, or top of the stems.

Endemic; species 2, found in South West Africa, Bechuanaland, and several of the central and north-western districts of the Cape Province. (Type: *H. decipiens* N. E. Br.)

6883 40. DUVALIA Haw., Syn. Pl. Succ., p. 44 (1812)

Sepals ovate, acuminate, sometimes with scales within at the base. *Corolla-tube* very shallow; disc raised into a cushion-like ring (annulus) which is sometimes hairy; lobes narrowly linear-lanceolate to ovate, usually

acuminate, folded longitudinally backwards into vertical plates or the basal half more or less expanded, sometimes ciliate with simple or vibratile hairs. *Corona* double, arising near the top of the staminal-column; outer corona hidden by or sometimes hiding the annulus, flat and plate-like, entire or more or less pentagonal or rarely 10-angled, sometimes papillose with short glandular hairs; inner corona of 5 more or less turgid lobes, sometimes horizontal and appearing peltate or ovate and with an ovate or oblong lobe from the inner face which is incumbent on the anthers. *Anthers* without an apical appendage; pollen-masses more or less ellipsoid, solitary and horizontal or ascending in each anther-theca; caudicles flattened, shorter than the pollen-masses with a wing-like projection on either side of the pollen-carrier. *Style-apex* discoid. *Follicles* narrowly fusiform. *Seed* crowned with a tuft of hairs.

Dwarf succulents; stems decumbent or erect, in some species occasionally subterranean with the tips rising to the surface, 4—6-angled, with spreading teeth; leaves rudimentary at the tip of each tooth; stipules represented by a minute denticle at each side of the rudimentary leaf; flowers in small clusters or cymes near the base or middle of the young shoots or the flowers sometimes solitary; usually chocolate-coloured.

Species about 18; 1 species found in Arabia; recorded from South West Africa, Namaqualand, the Van Rhynsdorp district, Bechuanaland, the Transvaal and Orange Free State, many of the north-western and central districts of the Cape Province and in the coastal areas recorded from the Albany, Uitenhage, Uniondale, Riversdale, and Robertson districts. (Type: *D. elegans* (Masson) Haw.)

6884 41. CARALLUMA R. Br., Mem. Werner. Soc., vol. 1, p. 25 (1811)

(*Sarcophagophilus* Dinter)

Sepals lanceolate, ovate, sometimes acuminate, acute, often with scales within at the base. *Corolla* glabrous or hairy, sometimes papillose within; tube campanulate or saucer-shaped or almost wanting; lobes ovate, lanceolate, ovate-lanceolate, oblong, linear-oblong, or long-linear, sometimes longitudinally folded, sometimes with vibratile hairs on the margins. *Corona* usually distinctly 2-seriate; outer corona of 5 distinct entire bifid or trifid lobes, or united into an entire or 5—20-toothed cup, sometimes minute and pouch-like, sometimes several-toothed and ribbed on the inner surface; inner corona-lobes 5, subulate, linear-oblong, oblong, subquadrate or hemispheric, sometimes club-shaped and overtopping the staminal-column or produced into long filiform processes; sometimes both series combined so as to appear falsely 1-seriate. *Pollen-masses* solitary and horizontal or ascending in each anther-theca, subellipsoid or flattened and more or less obovate; caudicles shorter than the pollen-masses. *Style-apex* dilated, truncate, more or less 5-angled. *Follicles* narrowly fusiform, smooth. *Seeds* more or less oblong, convex on one side, concave on the other; embryo straight; cotyledons fused; divided above; radicle not differentiated from the cotyledons; endosperm scanty.

Succulent plants, sometimes densely and bushily branched; stems often stout, 4—6-angled; angles thick and obtusely rounded or acute, often with conical teeth tipped with a hard-pointed acute spine; flowers usually in fascicles of 3 to 26, more rarely solitary.

Species over 100, natives of India, Baluchistan, Afghanistan, Ceylon, Palestine, Arabia, Socotra, the Mediterranean Islands, Spain, and Africa; about 50 species in South Africa, found in South West Africa, Namaqualand, the south-western, south-eastern, north-western and central districts of the Cape Province, Bechuanaland, the Transvaal, and Swaziland; absent from the eastern districts. (Type: *C. adscendens* (Roxb.) R. Brown)

6885

42. *STAPELIA* Linn., Sp. Pl., ed. 1, p. 217 (1753)

Sepals lanceolate or ovate-lanceolate, usually acute, sometimes acuminate, glabrous or hairy, often with scales within at the base. *Corolla* flat or with a short campanulate or funnel-shaped or cup-like tube sometimes with a raised annulus on the disc, frequently rugose on the inner face, often ciliate with vibratile clavate hairs, glabrous or hairy; lobes ovate, lanceolate, ovate-lanceolate, or roundish-oblong, usually acute, frequently acuminate and sometimes produced into tail-like tips. *Corona* double, arising from the staminal-column; outer corona of 5 lobes; lobes free or rarely connate at the base, variously shaped, entire, bifid, 3-toothed, or deeply 3-fid, usually channelled down the face, often recurved at the apex, sometimes acuminate or produced into a subulate point, rarely hairy, rarely the outer corona of 10—15 free segments or subequally 10-toothed; inner corona of 5 simple bifid 2-horned or dorsally winged or crested lobes. *Anthers* without a terminal appendage; pollen-masses solitary in each anther-theca, ascending or subhorizontal; more or less half-moon-shaped; caudicles shorter than the pollen-masses, dilated. *Follicles* narrowly or stoutly fusiform, smooth, sometimes hairy. *Seed* ovate or orbicular, with a narrow wing or a definite marginal rim; embryo straight; cotyledons fused, with 2 ovate lobes at the base; radicle small; endosperm 0.

Dwarf succulent perennial herbs, branching at the base; stems usually 4-angled, with flat or concave sides, glabrous or hairy; angles often compressed and usually toothed; teeth often tipped with a minute rudimentary leaf; flowers 1 to many from the base or middle or upper part of the stem or clustered along the sides of the stem, pedicelled, large to moderate in size, usually with a disagreeable or carrion-like odour.

An African genus of over 80 species, most of which are found in South Africa and widely distributed. (Type: *S. variegata* Linn.)

6885a

43. *STULTITIA* Phill., Fl. Pl. S. Afr. text ad t. 520 (1933)

(*Stapeliopsis* Phill., non Pillans, non Choux)

Sepals ovate, lanceolate, or linear-lanceolate, acute, with scales within at the base. *Corolla-tube* campanulate, urceolate, cup-shaped or not very evident; lobes ovate, sometimes subacuminate, with or without vibratile hairs; disc with a distinct annulus. *Corona* arising from the base of the staminal-column, glabrous or hairy; outer corona saucer-shaped, composed of 5 cucullate lobes or of 5 deeply divided lobes; inner corona of 5 lobes; lobes linear, ovate-lanceolate, quadrate, usually produced into a subulate or linear appendage which is sometimes subclavate at the apex, sometimes with a tooth on either side of the appendage or with a small dorsal hump at the base of the appendage. *Anthers* without appendages; pollen-masses somewhat flattened and obovate; caudicles much shorter than the pollen-masses, with a horizontal wing at the junction with the pollen-carrier. *Style-apex* truncate.

Dwarf succulent herbs; stems 4-angled, with prominent teeth from the angles and with 2 small teeth at the base of the teeth from the stem angles; flowers 1—5 usually arising near the base of the stems.

Endemic; species 4, found in the Transvaal, Zululand, Natal, the Orange Free State, the Griqualand West area and from the Somerset East district in the Cape Province. (Type: *S. cooperi* (N. E. Br.) Phill.)

NOTE.—Since the species *Stapelia cooperi* N. E. Br. was removed from the genus *Stapelia* to the genus *Stultitia*, 3 other species of *Stultitia* have been described. With this further material available the question arises whether *Stultitia* should be retained as a genus.—E. P. P.

- 6885b 44. *STAPELIOPSIS* Pillans (non Choux, non Phillips) S. Afr. Gard., vol. 18, p. 32 (1928)

Sepals ovate-lanceolate, acute, minutely velvety. *Corolla-tube* subglobose, constricted at the mouth, papillate within and with the papillae tipped with a simple hair, velvety without; lobes much shorter than the tube, ovate-deltoid, acute. *Corona* double; outer corona erect, tube-shaped, 5-lobed, hairy on the basal half; lobes incurved, obtuse or acute, subulate, laterally compressed, reaching up to the apex of the outer corona and adnate to it for $\frac{3}{4}$ of their length. *Anthers* inflexed on the style-apex, without appendages; pollen-masses solitary, ascending in each anther-theca, minutely rugulose; caudicles shorter than the pollen-masses. *Style-apex* dilated.

Perennial succulents; stems erect or ascending, 4-angled, with the sides flat or subconvex, covered with minute papillate hairs; angles obtuse, hardly compressed, with broad, deltoid, acute, shortly mucronate, teeth; flowers 1 to 3 in cymes near the base of the young stems.

Endemic; species 1, only known from Namaqualand. (Type: *S. neronis* Pillans)

NOTE.—1 have not seen specimens.—E. P. P.

- 6885c 45. *LUCKHOFFIA* White & Sloane, S. Afr. Gard. & Country Life, vol. 25, no. 2, p. 36 (1935)

Corolla with the united portion flat, with a central cavity lodging the corona, papillate, with the papillae each surmounted by a short horizontal black hair; lobes ovate, acuminate, sparsely ciliate. *Corona* double; outer corona of 5 truncate lobes which are recurved and notched at the apex; inner coronalobes linear-lanceolate, incumbent on the anthers and exceeding them, connivent, connected with the outer corona.

Stems erect, crowded, branching at the base, 8-angled, with the angles raised into compressed tubercles; tubercles in young stems each surmounted by a short spine.

Endemic; species 1, only known from the Clanwilliam district. (Type: *L. beukmanii* (Luckhoff) White & Sloane)

NOTE.—1 have not seen a specimen. The above description is taken from White and Sloane.—E. P. P.

- 6887 46. *HUERNIA* R. Br., Mem. Werner. Soc., vol. 1, p. 22 (1809)

Sepals linear-lanceolate, linear-filiform, or ovate, often acuminate, sometimes longer than the corolla-tube, often with scales within at the base. *Corolla-tube* mostly campanulate, usually tuberculate or papillose within and the tubercles or papillae tipped with hairs, more rarely glabrous, sometimes with a convex ring round the mouth, sometimes nerved on the outer surface; lobes longer or shorter than the tube, usually ovate, acuminate and acute, with 5 small teeth which alternate with the lobes (in one species with the teeth and lobes of nearly equal size). *Corona* double (single in one species), usually longer than the staminal-column, sometimes hairy; outer corona spreading upon and more or less adnate to the bottom of the corolla-tube, of 5 lobes which are sometimes united at the base; lobes oblong, subquadrate, transversely oblong, or ovate, emarginate or shortly or deeply bifid, sometimes 3—4-toothed, rarely subequally 10-toothed; inner corona usually linear or ovate, usually acuminate, often with a crest or hump at the base, sometimes variously expanded at the apex, incumbent on the backs of the anthers. *Anthers* without an appendage; pollen-masses solitary, erect or subhorizontal in each anther-theca, usually suborbicular, pellucid on the inner side; caudicles shorter than the pollen-masses, with small wing-like

expansions at the junction with the pollen-carriers. *Style-apex* discoid, 5-angled.

Dwarf perennial succulents; stems 4—5-angled, toothed on the angles, rarely with bristle-pointed teeth, glabrous; leaves undeveloped; flowers solitary, or 2—5 together.

Species about 50, natives of Africa and southern Arabia; the majority of the species found in South Africa and fairly widely distributed. (Type: *H. campanulata* (Masson) R. Br.)

NOTE.—The genus is named after Justus Heurnius but was incorrectly spelt by R. Brown. Sprengel (1817) adopted the correct spelling *Heurnia*; Dr. T. A. Sprague (*Kew Bulletin*, 1929) maintains that R. Brown's original spelling *Huernia* must stand; K. Schumann (1895) and O. Stapf (Icon. Lond.) reverted to the spelling *Heurnia*, while the *Index Kewensis* (1935) upholds the original spelling. As the spelling *Huernia* appears in all the standard works on the family it should be retained under Article 70 of the International Rules of Nomenclature (1935).—E. P. P.

6888 47. DIPLOCYATHA N. E. Br., Journ. Linn. Soc. Bot., vol. 17, p. 167 (1878)

Sepals ovate, subacuminate, acute. *Corolla* papillate on the inner face; tube campanulate with another tube arising from its base within and reaching to its mouth and there thickened into a recurved rim; lobes ovate, acuminate, acute, ciliate with clavate vibratile hairs. *Corona* double, arising from the staminal-column; outer-corona of 5 transversely-oblong bifid lobes connate at the base; inner corona of 5 ovate lobes incumbent on the backs of the anthers with the tips upturned. *Anthers* with a truncate apex; pollen-masses half-moon-shaped, solitary and subhorizontal in each anther-theca; caudicles shorter than the pollen-masses, with lateral wings. *Style-apex* discoid.

A dwarf succulent perennial; stems decumbent, stout, 4-angled, toothed; leaves undeveloped; flowers pedicelled, arising from near the base of the young shoots.

Endemic; species 1, recorded from the Ceres, Calvinia, Prince Albert, Ladismith, and Beaufort West districts. (Type: *D. ciliata* (Thunb.) N. E. Br.)

6889 48. PECTINARIA Haw., Suppl. Pl. Succl., p. 14 (1819)

Sepals ovate, acuminate. *Corolla* sometimes hairy within; tube hemispherical, cupular, or campanulate; lobes lanceolate or ovate-lanceolate, acuminate, connate at the apex. *Corona* double; outer corona cup-like and variably cut into 10 to numerous teeth or of 5 minute lobes; inner corona of 5 lobes incumbent on the backs of the anthers or erect and about equalling them or longer and connivent-erect over them. *Anthers* without apical appendages; pollen-masses solitary and erect or subhorizontal in each anther-theca; caudicles shorter than the pollen-masses. *Follicles* narrowly fusiform, acuminate, smooth, glabrous.

Succulent herbs; stems tufted, usually procumbent, often forming arches above the ground and with their tips or other portions buried in the ground, acutely or obtusely or obscurely 4—8-angled, acutely toothed or tessellately tuberculate along the angles, often with a distinct bud in the axil of each tooth or tubercle when the stems are fully developed; flowers solitary or in fascicles of 2—5 in the grooves or on the sides between the angles, bud-like, often with a "frosted" appearance on the inner surface and sometimes on the outside as well.

Endemic; species 6, found in Namaqualand and a few in the north-western and central districts of the Cape Province. (Type: *P. articulata* (Ait.) Haw.)

6890 49. RHYSSOLOBIUM E. Mey., Comm. Pl. Afr. Austr., p. 217 (1837)

Sepals thick, lanceolate, acute. *Corolla* somewhat fleshy; tube campanulate; lobes slightly spreading, densely bearded within. *Corona* none. *Staminal-column* inserted near the base of the corolla-tube; the filament part with

prominent horny margins on the upper part. *Anthers* with a membranous appendage. *Pollen-masses* solitary and erect in each anther-theca; caudicles short. *Follicles* small.

A small much-branched shrublet with woody whitish-puberulous branches; leaves small, thick, opposite or subfasciculate at the base of the branches, with revolute margins; flowers 1—3, subsessile at the nodes.

Endemic; species 1, recorded from Namaqualand. (Type: *R. dumosum* E. Mey.)

6891 50. GYMNEMA R. Br., in Mem. Werner. Soc., vol. 1, p. 33 (1809)

Sepals elliptic, shorter or as long as the corolla-tube. *Corolla-tube* campanulate; lobes as long as the tube, reflexed, oblong or oblong-ovate, minutely notched at the apex. *Corona* arising from and adnate to the corolla-tube, either of 5 fleshy lobes which are channelled on the face and adnate up to the mouth of the corolla-tube or of 5 pairs of fleshy ridges on the lower part of the corolla-tube, alternating with the corolla-lobes. *Staminal-column* arising from the base of the corolla; anthers with short membranous appendages; pollen-masses linear-oblong, solitary and erect in each anther-theca; caudicles absent. *Style-apex* produced beyond the staminal-column, mitre-shaped. *Follicles* smooth.

Twining shrubs; leaves opposite, petioled, simple, elliptic or ovate, entire; inflorescence a lateral or subaxillary umbel, often 2 from the same node and opposite.

Species several, natives of the tropical and subtropical regions of the Old World; 1 species recorded from the Transvaal and Natal. (Type: *G. sylvestre* R. Br.)

6896 51. SPHAEROCODON Benth., in Benth. & Hook. f. Gen Plant., vol. 2, p. 772 (1876)

Sepals ovate-lanceolate, with scales at the base within. *Corolla-tube* campanulate; lobes broadly ovate, about as long as the tube. *Corona* of 5 small fleshy tubercles arising from the staminal-column some distance above its base. *Staminal-column* arising from the base of the corolla-tube; anthers without apical appendages, with membranous margins; pollen-masses ellipsoidal, solitary and erect in each anther-theca; caudicles much shorter than the pollen-masses. *Style-apex* discoid.

Perennial herbs with a woody or tuberous rootstock; stems erect, often flexuose but not twining; leaves opposite, shortly petioled, elliptic or obovate, entire; inflorescence a pedunculate subterminal umbel-like cyme.

An African genus of 2 species; 1 species recorded from the Transvaal, Swaziland, and Natal. (Type: *S. obtusifolium* Benth.)

6899 52. TYLOPHORA R. Br., in Mem. Werner. Soc., vol. 1, p. 28 (1809)

Calyx 5-partite; segments usually about as long as the corolla-tube, elliptic, lanceolate, or ovate-lanceolate, sometimes with scales within at the base. *Corolla-tube* saucer-shaped; lobes longer than the tube, oblong-ovate, oblong-elliptic, or lanceolate, sometimes acuminate. *Corona* usually of 5 tubercles adnate to or radiating from the staminal-column at or above its base and usually not exceeding the filament part of it, rarely of free tips or of entirely free flat lobes and attaining to the level of the anther-tips. *Anthers* tipped with a small membranous appendage which is sometimes reduced to a mere hyaline margin; pollen-masses globose or ellipsoid, suberect, horizontal, or pendulous; caudicles shorter than the pollen-masses. *Style-apex* discoid or slightly convex. *Follicles* usually narrowly fusiform, sometimes

long-acuminate, smooth or with thick transverse ridges. *Seed* ovate, with a narrow marginal wing; cotyledons broadly elliptic; radicle terete, shorter than the cotyledons; endosperm scanty.

Twining or rarely erect perennials; leaves opposite, petiolate, simple; oblong, linear, ovate, or lanceolate, sometimes shortly acuminate and acute; inflorescence a single pedunculate or sessile umbel-like cyme or the flower clusters scattered along a single-jointed axis or along the branches of a dichotomously branched cyme or panicle, lateral at the nodes.

Species many, natives of the tropical and subtropical regions of the Old World; 9 species in South Africa, extending from the Transvaal and Natal to the George and Knysna districts; also recorded from the Somerset East district and South West Africa.

6899a **53. EMPLECTANTHUS** N. E. Br. Fl. Cap., vol. 4, sect. 1, p. 771 (1908)

Calyx 5-parted. *Corolla* deeply 5-lobed, with the united part forming a broad shallow cupular tube; lobes valvate in bud. *Corona* double, arising from the staminal-column; outer corona of 5 small pouch-like spreading lobes which alternate with the anthers; inner corona of 5 simple lobes which are free above and more or less adnate to the stamens and dorsally connected with the base of the outer corona-lobes. *Anthers* without an apical appendage; pollen-masses minute, subquadrate, with a pellucid margin on one side, solitary and erect in each anther-theca; caudicles shorter than the pollen-masses. *Follicles* only seen in the immature state.

Herbaceous twiners with the habit and general appearance of *Tylophora*; leaves opposite, petioled, simple, ovate, acuminate, cordate at the base; peduncles lateral at the nodes, bearing 1 or more fascicles of flowers.

Endemic; species 2, recorded from Zululand and Natal. (Type: *E. cordatus* N. E. Br.)

NOTE.—Specimens not seen by me.—E. P. P.

6911 **54. MARSDENIA** R. Br., in Mem. Wern. Soc., vol. 1, p. 28 (1809)

Calyx 5-partite; segments oblong, oblong-lanceolate, or ovate, with scales within at the base. *Corolla-tube* campanulate; lobes usually longer than the tube, oblong or linear, sometimes hairy at the base within. *Corona* of 5 fleshy lobes arising from and adnate to the staminal-column, with free tips and often with free margins, sometimes with tubercle-like projections at the base which are sometimes confluent and produce more or less the appearance of an outer corona. *Staminal-column* arising from or near the base of the corolla; anthers terminated by long membranous appendages which are free or connate and more or less incumbent on top of the style-apex or applied to the sides of its conical tips or beak, pollen-masses ellipsoid or linear in outline, solitary and erect in each anther-theca; caudicles as long as or shorter than the pollen-masses. *Style-apex* conical or produced into a long cylinder which is sometimes as long as the corolla. *Follicles* with a thick or coriaceous pericarp, smooth, often winged, sometimes hairy. *Seed* ovate, with a narrow marginal wing, convex-concave; cotyledons elliptic; radicle cylindric, shorter than the cotyledons; endosperm scanty.

Climbing or erect perennials; leaves opposite, petioled, lanceolate, ovate, sometimes acuminate, sometimes cordate at the base; inflorescence an umbel-like cyme or of small sessile umbels or clusters scattered along the branches of the cymes or panicles, which are lateral at the nodes or axillary.

Species about 225, natives of tropical or subtropical regions; 3 species in South Africa ranging from Natal to the Uitenhage district; also recorded from South West Africa, Ngamiland, and Bechuanaland.

6917 55. PERGULARIA Linn., Mant., vol. 1, p. 8 (1767)

Calyx 5-partite; segments slightly shorter than the corolla-tube, lanceolate, with scales within at the base. *Corolla-tube* campanulate, campanulate-tubular, or cylindric; lobes 5, widely spreading, as long as the corolla-tube, elliptic, fimbriate or ciliate. *Corona* double; outer corona arising at the base of the staminal-column, membranous, annular, 5-lobed; inner corona of 5 erect fleshy lobes which are adnate to the staminal-column up to the anthers and free above and produced into horns which curve over the staminal-column and at the base produced into spreading deflexed spurs or pouches. *Staminal-column* arising in the mouth of the corolla-tube and exserted; anthers terminated by a membranous transversely oblong appendage which is inflexed over the style-apex; pollen-masses transversely oblong, solitary and pendulous in each anther-theca; pollen-carriers shorter than the pollen-masses. *Style-apex* 5-angled, dome-shaped on the disc. *Follicles* lanceolate or ovate in outline, sometimes acuminate, smooth or echinate. *Seeds* ovate, with a toothed marginal wing, hairy; cotyledons suborbicular; radicle terete, shorter than the cotyledons; endosperm scanty.

Twining perennials; leaves opposite, petioled, simple, subacuminate, cordate at the base, entire; inflorescence a long-peduncled corymb or raceme, sublateral at the nodes.

Species 4, natives of Africa, Arabia, Syria, India, and Madagascar; 2 species in South Africa, found in the Transvaal, Natal, South West Africa, Namaqualand, Bechuanaland, and Kuruman district.

6917a 56. TELOSMA Coville, Contrib. U.S. Herb., vol. 9, p. 384 (1905)

Sepals membranous, elliptic, ciliate. *Corolla-tube* inflated at the base, then constricted into a neck, densely hairy in the mouth and throat; lobes longer than the tube, linear, hairy at the base. *Corona* of 5 erect obovate lobes arising from the base of the staminal-column, with a linear process from the inner face which is longer than the lobe and projects above the style-apex. *Staminal-column* arising from the base of the corolla; anthers with erect membranous ovate appendages which are as long as the style-apex; pollen-masses linear, solitary and erect in each anther-theca; caudicles shorter than the pollen-masses. *Style-apex* somewhat ellipsoid, shortly divided at the apex. *Follicles* smooth.

Stems twining; leaves opposite, petioled, simple, elliptic or ovate-elliptic, shortly acuminate, entire; inflorescence in pedunculate or subsessile umbel-like cymes which are subaxillary or lateral at the nodes.

Species several, natives of Africa, India, and the Malay Archipelago; 1 species in South Africa, recorded from the Transvaal and Natal. (Type: *T. odoratissima* (Lour.) Coville)

6921 57. TENARIS E. Mey., Comm. Pl. Afr. Austr., p. 198 (1837)

(*Kinepetalum* Schltr.)

Sepals lanceolate, as long as or slightly longer than the corolla-tube. *Corolla-tube* shortly campanulate; lobes much longer than the tube, linear, linear-spathulate, or filiform. *Corona* small, double, arising from the staminal-column above its base; outer corona of 5 broadly ovate or subquadrate lobes or of minute pouches, erect or more or less spreading; inner corona of 5 linear subulate or filiform lobes which are incumbent on the backs of the anthers. *Staminal-column* arising from the base of the corolla, included in the corolla-tube; anthers without appendages or rarely with a very short appendage, exceeding the style-apex; pollen-masses ellipsoid, subsessile or subhorizontal and solitary in each anther-theca; caudicles shorter than

the pollen-masses. *Follicles* erect, somewhat diverging, slender, smooth. *Seeds* crowned with a tuft of hairs.

Perennial herbs; stems slender, arising from a tuberous rootstock; leaves opposite, sessile, linear or filiform; inflorescence leafless and terminal, racemose or paniculate or the flowers 1—3 together in sessile or pedunculate fascicles or in long slender racemes.

An African genus of 7 species; 5 species in South Africa, recorded from the Transvaal, and the eastern coastal area to the East London, Albany, and Uitenhage districts; also recorded from South West Africa. (Type: *T. rubella* E. Mey.)

6924

58. FOCKEA Endl., Icongr., t. 91 (1838)

Sepals ovate-lanceolate or lanceolate, shorter than the corolla-tube. *Corolla-tube* campanulate, sometimes angled; lobes longer than the tube, lanceolate-elliptic or oblong-linear to almost filiform. *Corona* arising near the mouth or towards the base of the corolla-tube at the insertion of the staminal-column, longer than the staminal-column, tubular, toothed at the top and with 1—3 superposed series of 5 teeth or filiform processes placed between or decurrent as 5 pairs of wings within the tube. *Staminal-column* inserted near the mouth or towards the base of the corolla-tube; anthers with very large membranous appendages; pollen-masses erect and solitary in each anther-theca; caudicles shorter than the pollen-masses. *Style* minutely 2-lobed. *Follicles* fusiform, usually acuminate, sometimes large. *Seed* obovate or elliptic, flattish, with a marginal wing; embryo straight; cotyledons elliptic; radicle shorter than the cotyledons; endosperm 0.

Perennials with a tuberous rootstock which is sometimes large; stems erect or twining; leaves opposite, sessile or shortly petioled, linear or elliptic, sometimes undulate; inflorescence of small axillary clusters or cymes.

An African genus of 11 species; 5, perhaps more, species found in South Africa, recorded from the Transvaal, Zululand, Natal, and from the coastal belt in the Uitenhage and Mossel Bay districts, also from the Albany district, several of the central districts, Griqualand West, the north-eastern districts, and South West Africa. (Type: *F. capensis* Endl.)

158. CONVULVACEAE

Flowers regular, rarely slightly irregular, usually bisexual. *Calyx* 5- (rarely 4-) partite to the base, persistent, imbricate. *Corolla-tube* campanulate or funnel-shaped, more rarely cylindric; limb often scarcely lobed, sometimes 5-lobed or 5-cleft. *Disc* often present, surrounding the base of the ovary. *Stamens* as many as and alternating with the corolla-lobes, inserted on the corolla-tube; filaments usually linear, sometimes hairy; anthers 2-theous, dehiscent longitudinally; pollen-grains glabrous or spiny. *Ovary* superior, entire or sometimes deeply lobed, 1—4-chambered, with 1—4 ovules in each chamber; styles 1—2, terminal on the ovary or gynobasic, sometimes the 2 styles connate at the base; stigmas terete, capitate, dilated, or linear. *Fruit* capsular or indehiscent. *Seeds* as many as the ovules or fewer, glabrous, villous, or woolly; embryo rarely straight; cotyledons folded, sometimes also convolute; endosperm scanty.

Herbs or shrubs, frequently twining, rarely trees (in *Cuscuta* parasites with yellow string-like stems and undeveloped leaves); leaves alternate, simple, sometimes palmately or pinnately lobed, usually exstipulate; inflorescence a pedunculate bracteate axillary cyme or flowers solitary; flowers various in size and colour, often showy.

About 40 genera and 1,000 species described, mostly natives of tropical Asia and America; also found in Australia, Africa, and Madagascar.

- | | | |
|--|------------------------------------|----|
| 1. Herbaceous twining parasite, with yellow string-like stems; leaves undeveloped | 1. <i>Cuscuta</i> Linn. | 2 |
| Plants with well-developed green leaves | | |
| 2. Ovary 2—4-lobed; styles 2, inserted between the lobes of the ovary ... | | 3 |
| Ovary not lobed; style 1—2-cleft, rarely styles 2, but then terminal ... | | 4 |
| 3. Ovary 4-lobed, rarely 5-lobed, with a single ovule in each chamber | 3. <i>Falkia</i> Linn. f. | |
| Ovary 2-lobed, with two ovules in each chamber | 2. <i>Dichondra</i> Forst. | |
| 4. Ovary 1-chambered | 8. <i>Hewittia</i> Wight & Arn. | |
| Ovary usually 2-chambered, rarely 3—4-chambered | | 5 |
| 5. Styles 2, free or united below | | 6 |
| Style 1 | | 7 |
| 6. Stigmas filiform or club-shaped | 4. <i>Evolvulus</i> Linn. | |
| Stigmas capitate or peltate | 5. <i>Breweria</i> R. Br. | |
| 7. Plants covered with star-shaped hairs | 10. <i>Astrochlaena</i> Hallier f. | |
| Plants glabrous or hairy, but hairs not star-shaped | | 8 |
| 8. Ovary 4-chambered, with a single ovule in each chamber | 12. <i>Rivea</i> Choisy | |
| Ovary 2-chambered, with 1—2 ovules in each chamber, if 4-chambered then fruit a capsule with usually 4-valves | | 9 |
| 9. Pollen grains spinose | 11. <i>Ipomoea</i> Linn. | |
| Pollen grains smooth | | 10 |
| 10. Stigmas terete, subclavate or filiform | 7. <i>Convolvulus</i> Linn. | |
| Stigmas not as above | | 11 |
| 11. Leaves cordate at the base | 6. <i>Jacquemontia</i> Choisy | |
| Leaves not cordate at the base | 9. <i>Merremia</i> Dennst. | |

6968 **1. CUSCUTA** Linn., Sp. Pl., ed. 1, p. 124 (1753)

Calyx shorter or longer than the corolla-tube, rarely divided almost to the base; tube shortly campanulate; lobes or segments usually 5, more rarely 4, sometimes subequal, ovate or elliptic. *Corolla-tube* campanulate, urceolate, ovoid, or globose, with membranous fimbriated or toothed scales within alternating with the lobes; lobes usually 5, more rarely 4, ovate, ovate-lanceolate, or lanceolate, as long as or shorter than the tube. *Stamens* fixed in the corolla-throat, usually shorter than the corolla-lobes; filaments subterete, rarely absent; anthers elliptic. *Ovary* subglobose, completely or partially 2-chambered, with 2 ovules in each chamber; styles 2, with stigmas shorter than or as long as the corolla-lobes, free or connate at the base, linear or subterete; stigmas longer or shorter than the styles, clavate, cylindric, or capitate. *Fruit* a globose or ovoid dry or fleshy capsule, circumscissile or irregularly dehiscent. *Seed* somewhat convex on one side and flattish on the other; embryo very small in relation to the size of the seed, cylindric, straight or somewhat curved; cotyledons small; endosperm present.

Stems twining, filiform, yellowish; leaves not developed; flowers in clusters, whitish or rose-coloured.

Species about 80, distributed in the warmer and temperate regions; about 12 species in South Africa, fairly widely distributed. (Type: *C. europaea* Linn.)

6971 2. *DICHONDRA* Forst., Char. Gen., p. 39, t. 20 (1776)

Sepals subequal, distinct from the base, usually spatulate or obovate, hairy. *Corolla-tube* broadly campanulate; lobes 5, induplicate. *Stamens* shorter than the corolla. *Ovary* completely 2-lobed, with 2 ovules in each chamber, hairy; styles 2, free or connate below, attached between the lobes of the ovary; stigmas capitate. *Fruit* of 2 membranous capsules, indehiscent or irregularly 2-valved, hairy. *Seed* 1 in each loculus, rarely 2, subglobose or obovoid, glabrous; cotyledons spirally coiled, elliptic; radicle curved, terete; endosperm scanty.

Small prostrate glabrous or silky-pubescent herbs; leaves simple, cordate-orbicular or reniform, petioled, entire; flowers small, solitary, axillary.

Species 4—5 found in the warmer regions of both hemispheres; 1 species in South Africa, recorded from the Transvaal, Natal to the Cape. (Type: *D. repens* Forst.)

6972 3. *FALKIA* Linn. f., Suppl., p. 30 (1781)

Calyx shorter than the corolla-tube, forming a tube or divided almost to the base; tube campanulate, sometimes ribbed, hairy; lobes or segments 5, rarely 6, ovate, shorter than the tube when tube present. *Corolla-tube* funnel-shaped or campanulate; limb plicate, 5-angled or shortly and broadly 5-lobed. *Stamens* 5, inserted on the corolla-tube, included; filaments linear; anthers oblong. *Ovary* deeply 4-lobed, very rarely 5-lobed, with a single ovule in each chamber, hairy; styles 2, very rarely 3, gynobasic, almost as long as the corolla-tube, linear; stigmas subglobose. *Fruit* split into 4, very rarely 5, membranous utricles, sometimes fewer by abortion. *Seeds* obovoid or subglobose; embryo curved; cotyledons flat, folded; radicle terete, curved; endosperm scanty.

Dwarf prostrate matted perennial herbs; leaves petioled, ovate or heart-shaped, entire; flowers small, solitary, peduncled, axile.

An African genus of 3 species, extending from the Transvaal and Natal to the south-western districts of the Cape Province; also recorded from some inland districts, the Orange Free State, Griqualand West, and the Vryburg district. (Type: *F. repens* Linn. f.)

6973 4. *EVOLVULUS* Linn., Sp. Pl., ed. 2, p. 391 (1762)

Calyx shorter than the corolla-tube; tube campanulate; lobes about as long as the tube, lanceolate. *Corolla* funnel-shaped, campanulate, or subrotate; limb plicate, 5-angled or shortly 5-lobed. *Stamens* 5, fixed above the middle of the corolla-tube, rarely near the base, included or exserted; filaments linear; anthers linear. *Ovary* 2-chambered, rarely 1-chambered by abortion of the septum, with 2 ovules in each chamber; styles 2, included, free from the base and each divided above or divided almost to the base; stigmas linear-terete or subclavate. *Fruit* a subglobose capsule, dehiscing into 2—4 valves. *Seeds* 4, or by abortion fewer, subglobose, glabrous; embryo folded; cotyledons elliptic-ovate, folded; radicle terete, curved; endosperm scanty.

Annual or perennial herbs, not twining, rarely undershrubs, sometimes with a slender tap-root and several branches from the ground level; leaves usually small, often sessile, entire; inflorescence sometimes a terminal spike or raceme or a lax panicle, more usually flowers solitary and subsessile or 1—3-nate on axillary peduncles.

Species almost 100, chiefly natives of tropical America; 1 species in South Africa found in the Transvaal, Zululand, Natal, and also recorded from South West Africa, the Vryburg district and Griqualand West. (Type: *E. nummularius* Linn.)

6978

5. *BREWERIA* R. Br., Prodr., p. 487 (1810)

(Seddera Hochst.)

Sepals almost as long as or shorter than the corolla, subequal or the outer larger than the inner, lanceolate or ovate, acuminate. *Corolla* funnel-shaped or rotate, sometimes plicate and 5-angled, shortly and broadly lobed. *Stamens* 5, very rarely 4, shorter than the corolla, inserted on the corolla-tube; filaments linear, usually dilated at the base and usually toothed on each side; anthers oblong. *Ovary* 2-chambered, with 2 ovules in each chamber; styles 2, very rarely 3, almost as long as the corolla, free to the base or connate below, sometimes connate for half their length; stigmas capitate or 2-armed, or slightly 2-lobed. *Fruit* a capsule, dehiscing into 4 valves. *Seed* irregularly concave-convex, glabrous or pilose; embryo more or less straight; cotyledons elliptic; radicle terete; endosperm scanty.

Erect or scandent, sometimes low bushes branching from near the base; leaves sessile or subsessile, entire; inflorescence an axillary cyme, sometimes a terminal thyrsoid panicle, sometimes reduced to a single flower.

Species about 25, distributed through the warmer regions of both hemispheres; 3 species in South Africa, extending from the Transvaal into Natal and into Griqualand West, Bechuanaland, and South West Africa.

NOTE.—Dr. H. G. Schweickert, writing from Kew at the beginning of the year 1938, states, *inter alia*, "The genus *Breweria* R. Br. is Australasian and in the strict sense does not occur in South Africa; the 2 genera (i.e. *Breweria* and *Seddera*) strictly speaking are not congeneric; I would thus be inclined to distinguish between the 2 genera in question and retain our South African species under *Seddera* Hochst." When dissecting specimens in the National Herbarium, I find the styles may be free to the base or united at the base for a varying part of their length, so that the free or partly united styles is not a generic character; the shape of the corolla-tube also varies. I consider the 2 genera, *Breweria* and *Seddera*, congeneric and, as *Breweria* is the older name, it must stand.—E. P. P.

6991

6. *JACQUEMONTIA* Choisy in Mem. Soc. Phys. Geneve, vol. 6, p. 476 (1833)

Calyx as long as or longer than the corolla; sepals 5, leafy, equal or the outer longer than the inner, lanceolate, acuminate. *Corolla-tube* broadly or narrowly campanulate or tubular; limb plicate, 5-angled or obscurely 5-lobed. *Stamens* inserted near the base of the corolla, included; filaments linear; anthers oblong. *Ovary* 2-chambered, with 2 ovules in each chamber; style simple, included; stigmas 2, ovate or oblong, more or less flattened. *Fruit* a globose capsule, dehiscing into 4 valves or sometimes into 8 valves. *Seed* rounded on back, with 2 flat lateral faces (more or less 3-angled in cross-section), glabrous; embryo curved; cotyledons folded; radicle terete, curved; endosperm scanty.

Twining herbs; leaves petioled, ovate, sometimes shortly acuminate, often cordate at the base, entire; inflorescence axillary, peduncled, cymose or capitate.

Species 30—40, natives of Africa and tropical America; 1 species in South Africa found in the Transvaal, Natal, and South West Africa.

6993

7. *CONVOLVULUS* Linn., Sp. Pl., ed. 1, p. 153 (1753)

Calyx shorter than the corolla; sepals 5, very variable in shape, subequal or the outer rarely larger than the inner. *Corolla* broadly, rarely narrowly, funnel-shaped or campanulate; limb plicate, 5-angled or rarely 5-lobed. *Stamens* 5, fixed near the base of the corolla, included; filaments linear, often dilated at the base; anthers oblong, sagittate or cordate at the base. *Disc* surrounding the base of the ovary, annular. *Ovary* 2-chambered, with 2 ovules in each chamber; style simple, included; stigmas 2, linear-terete, subclavate, slightly dilated or filiform. *Fruit* a globose capsule, 2-locular, dehiscing into 4 valves or dehiscing irregularly. *Seed* rounded on the back,

flat on the two lateral faces, or irregularly angled, sometimes shortly tuberculate or with transverse ridges, glabrous; embryo curved, more rarely almost straight; cotyledons folded, elliptic, often 2-lobed at the apex; radicle terete, usually curved; endosperm scanty.

Twining or erect herbs; stems often from a woody rootstock or a tap-root; leaves sessile or petioled, linear, oblong, lanceolate, ovate, or elliptic, often cordate or hastate at the base, entire or pinnately cut, or crenate, or serrate; flowers pedunculate, axillary, with a pair of short bracts on the upper portion of the peduncle.

Species over 100, cosmopolitan, mainly in temperate and subtropical regions; over 20 species in South Africa with a fairly general distribution. (Type: *C. arvensis* Linn.)

6995 8. HEWITTIA Wight & Arn., Madras Journ., vol. 5, p. 22 (1837)

Sepals 5, leafy, unequal, with the two outer larger than the three inner. *Corolla* broadly funnel-shaped or campanulate; limb plicate, 5-angled or very shortly 5-lobed. *Stamens* inserted at the base of the corolla-tube, included; filaments linear, dilated and with a few hairs at the base; anthers oblong-linear, lobed at the base. *Disc* surrounding the base of the ovary, shortly cup-shaped. *Ovary* imperfectly 1-chambered, with 4 ovules, densely pilose; style simple, included; stigmas 2, ovate, thick. *Fruit* a capsule, dehiscing into 4 valves.

A twining pubescent herb; leaves petioled, broadly cordate, entire, angled, or 3-lobed, shortly apiculate; flowers axillary, long-peduncled, solitary or 2—3 together.

Species 1, spread throughout the tropics of the Old World; found in the Transvaal, Zululand, and Natal. (Type: *H. bicolor* Wight & Arn.)

6997 9. MERREMIA Dennst., Schluss. Hort. Malab., p. 34 (1818)

Sepals 5, equal, shorter than the corolla, elliptic, sometimes deeply concave, sometimes apiculate. *Corolla* funnel-shaped; limb scarcely lobed. *Stamens* 5, inserted low down on the corolla-tube, included; filaments linear, slightly broadening below; anthers oblong, lobed at the base; pollen grains smooth. *Disc* saucer-shaped, surrounding the base of the ovary. *Ovary* 2-chambered, with 2 ovules in each chamber; style simple, included; stigma capitate or flat, somewhat 2-lobed. *Fruit* a membranous capsule. *Seed* somewhat flattened and elliptic or thicker and subquadrate in outline, sometimes somewhat tuberculed; cotyledons linear and twisted or broader and folded; radicle flattened with the tip fitting into a depression closed on the outside with a stopper; endosperm scanty.

Perennial herbs, sometimes twining, sometimes with slender stems from a slender tap-root; leaves sessile or petioled, linear, sometimes with a toothed wing at the base, entire or palmately or pinnately lobed; flowers axillary, solitary, peduncled.

Species about 60, widely spread in warm regions; 3 species in South Africa recorded from the Transvaal, Orange Free State, Natal, the Calvinia and Kuruman districts, and from South West Africa. (Type: *M. convolvulacea* Dennst.)

7000 10. ASTROCHLAENA Hallier fil., in Engl. Bot. Jahrb., vol. 18, p. 120 (1893)

Sepals unequal, often the 2 innermost smaller, lanceolate, covered with stellate hairs. *Corolla* funnel-shaped; limb almost entire. *Stamens* 5, included, inserted low down in the corolla-tube, usually 2 larger than the rest; filaments linear; anthers oblong, lobed at the base, sometimes covered with swollen hairs. *Disc* annular, at the base of the ovary. *Ovary* subglobose, 2-chambered, with 2 ovules in each chamber; style simple, included; stigmas

2, thick, oblong, obliquely truncate at the apex. *Fruit* a capsule. *Seed* clothed with very short or cobwebby hairs; embryo straight; cotyledons flat, broad, deeply 2-lobed; endosperm scanty.

Herbs or subshrubs, covered with soft stellate hairs; stem usually simple; leaves petioled, ovate, entire; inflorescence a cyme.

An African genus of about 12 species; 4 species recorded from South Africa, found in the Transvaal, Zululand, and Natal; also in South West Africa and Ngamiland.

7003

11. *IPOMOEA* Linn., Sp. Pl., ed. 1, p. 159 (1753)

Sepals 5, very various in shape and texture. *Corolla* broadly funnel-shaped or campanulate, rarely salver-shaped; limb 5-plicate, with the margin 5-angled, shortly (rarely deeply) 5-fid. *Stamens* 5, inserted low down in the corolla-tube, included; filaments sometimes dilated, often pilose at the base. *Disc* annular, entire or wavy, rarely 0. *Ovary* usually 2-chambered, with 2 ovules in each chamber or 4-chambered with a single ovule in each chamber, rarely 3-chambered with 2 ovules in each chamber; style simple; stigma subglobose and entire or 2-lobed, or stigmas 2 and globose, rarely with the stigma thick and subovoid. *Fruit* a capsule, globose, rarely ovoid, membranous, leathery or rarely somewhat succulent, dehiscent into 4 valves, rarely into 2 at the apex, rarely opening by an operculum or dehiscent irregularly. *Seeds* 4—6 or fewer by abortion, glabrous, pubescent, or silky villous; embryo curved; cotyledons folded; radicle semi-terete; endosperm scanty.

Twining or erect herbs or undershrubs, sometimes with underground tubers; leaves very various in shape, entire or lobed; inflorescence cymose or flowers solitary; flowers often large and showy.

Species about 400, cosmopolitan in the tropical and warm temperate zones; almost 50 species in South Africa widely distributed, absent from the south-western districts and rare in the south-eastern districts of the Cape Province. (Type: *I. pes-tigridis* Linn.)

7008

12. *RIVEA* Choisy, Mem. Soc. Phys. Geneve, vol. 6, p. 407 (1833)

Sepals lanceolate, acuminate, somewhat keeled. *Corolla-tube* long-cylindric, expanded into a funnel-shaped portion above, silky without; limb scarcely lobed, with well-defined silky mid-petaline areas. *Disc* cup-shaped, surrounding the base of the ovary. *Stamens* 5, included, fixed low down in the corolla-tube, with 3 of them larger than the other 2; filaments linear; anthers linear, sagittate at the base; pollen grains spiny. *Ovary* 4-chambered, with a single ovule in each chamber; style included, linear; stigma of 2 flat lobes. *Fruit* with a hard pericarp, not splitting into definite valves. *Seed* covered with long dense brown hairs; cotyledons folded, convolute; embryo flattish; endosperm very scanty.

A woody bush with whitish stems; leaves petioled, oblong, linear-oblong, elliptic, oblanceolate, usually silky pubescent; flowers large, axillary, solitary.

Species about 10, natives of East Indies and South America; 1 species recorded from South West Africa.

159. HYDROPHYLLACEAE

Flowers bisexual, regular. *Calyx* 5- or 10—12-lobed, sometimes appendiculate between the lobes. *Corolla* funnel-shaped, salver-shaped, campanulate or rotate; lobes 5 or 10—12, imbricate, rarely contorted. *Stamens* as many as the corolla-lobes and alternating with them, usually fixed near the base of the corolla-tube, exerted or included; filaments sometimes

dilated or appendiculate at the base; anthers 2-theous. *Disc* hypogynous, small or 0. *Ovary* superior, either 1-chambered with 2 parietal placentas or imperfectly or perfectly 2-chambered, with 2 to many ovules in each chamber; styles 2 and free or simple and 2-cleft; stigma terminal, small, or capitate. *Fruit* a capsule, dehiscent loculicidally, rarely septicidally, into 2 valves or dehiscent irregularly. *Seeds* 2 to many, oblong in outline, globose, or angled, tuberculate, reticulate, or rugose, rarely smooth; endosperm fleshy.

Annual or perennial herbs, rarely suffrutescent, usually hirsute or scabrid, sometimes densely bristly or spiny; leaves radicle, alternate, rarely opposite, usually petioled, entire, toothed, or pinnately- (rarely palmately-) lobed; inflorescence a bifid or dichotomous scorpioid cyme with the flowers usually sessile along one side of the branches, or in simple spikes, or racemes, or axillary, sometimes flowers solitary.

Genera 10, with about 150 species, found chiefly in western North America; a few extending along the Andes to Chili; also in the tropics of the Old World and the Sandwich Islands; 1 species in Japan.

7032

CODON Linn., Syst., ed. 12, p. 292 (1767)

Calyx 10—12-lobed; lobes linear, some almost as long as the corolla, with the alternate lobes sometimes smaller than the others, sometimes pustulate. *Corolla-tube* widely campanulate or oblong in outline, sometimes gibbous at the base, sometimes produced into plates at the base inside, with the filaments attached to the edge of the plates; lobes 10—12, shorter than the tube, oblong or ovate-elliptic, sometimes pustulate without, imbricate. *Stamens* 10—12, attached to base of the corolla, sometimes slightly exceeding the corolla; filaments semi-terete, hirsute below the middle; anthers oblong, versatile. *Ovary* narrowed at the apex, spuriously 2-chambered by the intrusion of the placentas, sometimes pustulate, with numerous ovules; ovules pear-shaped; style almost as long as the corolla, linear, cleft to almost half-way down; stigmas simple. *Fruit* a 2-valved capsule, with the valves bearing the placentas on their centres. *Seeds* numerous, globose or irregularly angled, rugose; embryo small in relation to size of seed, straight, semi-terete; cotyledons very small; endosperm fleshy.

Erect herbs, clothed all over with straight white spines; leaves alternate, simple, ovate or ovate-lanceolate, with the margins entire to sinuate-dentate; inflorescence a terminal cyme or flowers solitary.

An African genus of 2 species, both of which are found in South Africa and recorded from South West Africa, Namaqualand, and the Van Rhynsdorp and Ceres districts. (Type: *C. royeri* Linn.)

160. BORAGINACEAE

Flowers bisexual, rarely with occasional unisexual flowers, regular or more rarely irregular. *Calyx* sometimes persistent and accrescent; tube campanulate or cylindric, sometimes very short; lobes usually 5, rarely fewer or 6—8, longer or shorter than the tube, slightly imbricate or open, rarely valvate. *Corolla* 5-, rarely 4- or 6- to many-lobed; tube funnel-shaped, tubular, salver-shaped, campanulate, or rotate, sometimes with scales or folds in the throat; lobes imbricate, rarely plicate or contorted. *Stamens* as many as the corolla-lobes and alternating with them, fixed in the corolla-throat or corolla-tube; filaments sometimes dilated at the base, sometimes with a densely hairy scale, ridge, or protuberance at the attachment to the corolla, sometimes hairy at the base; anthers 2-theous, sometimes with a terminal appendage. *Disc* annular, entire or 5-lobed, sometimes inconspicuous or obsolete. *Ovary* superior, confluent at the base with the disc, entire or more

324. Pubescent or hispid herbs ; leaves divided . . . 191. *Urospermum*, Scop.
 Glabrous herbs ; leaves entire 192. *Tragopogon*, Linn.
 325. Achenes beaked or constricted at the apex 326
 Achenes without a beak 327
 326. Achenes 3-5-ribbed 195. *Lactuca*, Linn.
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 327. Pappus in 1-2 rows, persistent 197. *Hieracium*, Linn.
 Pappus in many rows, deciduous with the basal annulus . . . 328
 328. Achenes prominently 4-5-ribbed 193. *Launaea*, Cass.
 Achenes 10-20-ribbed 194. *Sonchus*, Linn.

8734

1. ETHULIA, Linn.

Heads many-flowered, homogamous. *Involucre* more or less campanulate ; bracts herbaceous, in many series, imbricate, acute. *Receptacle* flat, naked. *Corolla-tube* slender ; limb bell-shaped ; lobes 5, lanceolate. *Anthers* sagittate at the base. *Style* shortly exserted ; style-branches subulate, bristly. *Achenes* 4-5-ribbed, with the ribs angled, glabrous, glandular between the ribs, truncate and 4-5-angled above. *Pappus* an entire thickened marginal rim.

Erect branching leafy herbs ; leaves alternate, entire or serrated, pellucid-dotted ; flower-heads small, in a much-branched corymb ; flowers red or purple.

Species about 5, widely dispersed ; 1 species recorded from South Africa as a weed.

8740

2. ERLANGIA, Sch. Bip.

Heads homogamous. *Involucre* broadly campanulate ; bracts in many series, imbricate, dry, sub-herbaceous at the apex, acute ; the outer gradually smaller. *Receptacle* flat, nude. *Corolla-tube* slender ; limb narrowly bell-shaped ; lobes 5, narrow. *Anthers* sagittate at the base. *Style-branches* subulate, bristly. *Achenes* (immature) turbinate, 4-5-angled ?. *Pappus* bristles few (5 ?), rigidly plumose, caducous.

Erect slender herbs ; leaves alternate, narrow, entire ; flower-heads small pedunculate, few, grouped in a lax corymb.

An African genus of about 44 species ; 1 species found in Bechuanaland and 1 in S. W. Africa.

8746

3. BOTHRIOCLINE, Oliv.

Heads homogamous. *Involucre* campanulate ; bracts in many series, somewhat herbaceous, with scarious margins, or the inner dry ; the outer gradually smaller. *Receptacle* flat, honeycombed. *Corolla-tube* slender ; lobes 5. *Anthers* sagittate at the base, with an obtuse apical appendage. *Style-branches* subulate, bristly. *Achenes* (immature) obovoid or turbinate, 4-5-ribbed, rounded at the apex, glabrous. *Pappus* bristles few, caducous.

An erect branching herb ; leaves 3-4-nate, verticillate, or opposite the branches, shortly petioled, toothed ; heads medium-sized, grouped in a corymb.

An African genus of 13 species ; 1 species found in the Transvaal.

8749

4. HOPLOPHYLLUM, DC.

Heads homogamous, 5-6-flowered. *Involucre* ovate-oblong in outline ; bracts in many series, closely imbricate, broad, obtuse, spinous-mucronate, scarious or horny ; the outer gradually smaller. *Receptacle* flat, shortly fimbriate. *Corolla-tube* slender ; lobes 5, long, linear. *Anthers* sagittate at the base, with a long acuminate apical appendage. *Style-branches* subulate, bristly. *Achenes* sub-3-angled, densely hairy, slightly contracted under the pappus. *Pappus* in many rows, persistent, scabrous ; the outer bristle-shaped ; the inner subulate, acuminate.

Rigid shrubs ; leaves pungent, subulate or linear ; heads sessile, axillary or terminal.

Endemic ; species 2, found in the central and north-western districts.

8751

5. *VERNONIA*, Schreb.

(Including *Dolosanthus*, Klatt)

Heads homogamous, few- or many-flowered. *Involucre* various in shape ; bracts in many series, imbricate, obtuse or acute ; the inner longer than the outer. *Receptacle* naked, honeycombed or fimbriate. *Corolla-tube* slender ; lobes 5, long, lanceolate. *Anthers* sagittate at the base, with an obtuse or acuminate apical appendage, or appendage scarcely developed. *Style-branches* subulate, bristly. *Achenes* linear or prismatic, glabrous, pubescent, or silky-villous, striate or ribbed. *Pappus* in 2 series ; the inner of many long serrated bristles ; the outer of very narrow short scales ; rarely both series nearly alike and sub-equal, or the outer series of a few bristles.

Herbs, shrubs, climbers, rarely trees ; leaves alternate, petioled or sessile, often gland-dotted ; heads solitary, or grouped in a corymb or spike ; flowers usually purple or white.

Species about 960, found in America, tropical Africa, and Asia ; 39 species in South Africa, extending from the Transvaal and Natal to Riversdale ; also extend into S.W. Africa.

8764

6. *CORYMBIUM*, Linn.

Heads 1-flowered. *Involucre* cylindric ; bracts 2, opposite, one clasping the other, with 2-3 very small bracts at the base. *Receptacle* small. *Corolla-tube* slender ; lobes 5, long. *Anthers* blunt at the base, with an obtuse apical appendage. *Style-branches* subulate, bristly. *Achenes* narrowed to the base, densely clothed with long straight silky hairs. *Pappus* short, crown-like, irregularly cleft or fimbriate.

Herbaceous nearly stemless plants ; rootstock thick, clothed with long soft silky hairs ; leaves radical, linear, parallel-veined, rigid ; heads grouped in a lax or dense corymb ; peduncle almost naked.

Endemic ; species 10, found mostly in the south-western districts, but extend eastwards as far as the Uitenhage and Albany districts.

8785

7. *ADENOSTEMMA*, Forst.

Heads homogamous. *Involucre* campanulate, shorter than the flowers ; bracts in a single or double row, connate at the base, reflexed after flowering. *Receptacle* flat, naked. *Corolla-tube* short, tubular : lobes 5, tooth-like. *Anthers* obtuse at the base, without an apical appendage. *Style-branches* much exerted, linear, dilated above, coloured. *Achenes* oblong, 5-ribbed, glandular. *Pappus* of 3-5 short rigid spreading gland-tipped bristles.

Herbs, glandular-pilose or glabrescent : leaves opposite, petioled, toothed or sub-entire, often 3-nerved ; heads peduncled, medium-sized or small, grouped in a panicle.

Species about 33, found in the tropical and sub-tropical regions of both hemispheres ; 3 species in South Africa, found in the Transvaal, Zululand, Natal, the Transkei, and Komgha.

8795

8. *AGERATUM*, Linn.

Heads homogamous. *Involucre* campanulate ; bracts in 2-3-series, lanceolate, acuminate, equalling the disc. *Receptacle* flat, scarcely convex, naked or with caducous paleae between the flowers. *Corolla-tube* short ; lobes 5, short. *Anthers* obtuse at the base, with a terminal appendage.

sessile, linear. *Disc* scarcely any or cup-shaped. *Ovary* entire, often ovate in outline, entire, 4-chambered, with a single pendulous ovule in each chamber; style terminal, shorter than the stamens, with a stigmatic ring below the obtusely 2-lobed apex. *Fruit* a small drupe of 4 pyrenes. *Seeds* pendulous; endosperm copious or sparse, fleshy; embryo straight; cotyledons elliptic; radicle semi-terete.

Trees or sometimes climbing shrubs, rarely suffrutescent; leaves alternate, entire; inflorescence usually a dichotomous corymbose cyme, terminal.

Described species about 200, found in the tropics of both hemispheres; 1 species in South Africa, found in South West Africa, Griqualand West, the Transvaal, the Orange Free State, and some north-eastern and central districts. (Type: *T. volubilis* Linn.)

7052 4. HELIOTROPIUM Linn., Sp. Pl., ed. 1, p. 140 (1753)

Calyx much shorter than to almost as long as the corolla; lobes 5, oblong-ovate, lanceolate, linear-oblong, or linear. *Corolla-tube* tubular, sometimes cylindric, often hairy without, naked in the throat; lobes much shorter than the tube or slightly shorter, oblong-elliptic or broadly ovate, imbricate or induplicate. *Stamens* 5, fixed in the corolla-tube, included; anthers sessile, usually linear, sometimes with an apical appendage. *Disc* often present. *Ovary* 4-lobed, 4-chambered, or with each chamber again almost divided into 2, with a single pendulous ovule in each chamber; style terminal, included, sometimes thick or terete and cylindric, conical at the apex with a broad stigmatic ring at the base of the cone. *Fruit* somewhat fleshy, 2- or 4-sulcate or -lobed, at length dividing into 4 distinct or geminately cohering nutlets. *Seed* ovate in outline and plano-convex or convex on the back with 2 flat faces, sometimes subglobose, often tuberculate; embryo straight, often small in relation to the size of the seed; cotyledons flat, elliptic; radicle terete or compressed; endosperm scanty.

Herbs or undershrubs, rarely shrubs, sometimes densely hairy; leaves alternate, rarely subopposite, linear or sub lanceolate; inflorescence a forked scorpioid cyme or a simple raceme.

Species about 150, found throughout the tropical and temperate regions of the world; about 9 species recorded from South Africa, found in the Transvaal, the Orange Free State, South West Africa, Ngamiland, Bechuanaland, in the north-eastern and central districts of the Cape Province to the Uitenhage district. (Type: *H. europaeum* Linn.)

7056 5. TRICHODESMA R. Br., Prodr., p. 496 (1810)

Calyx shorter or longer than the corolla; tube usually campanulate; lobes 5, usually longer than the tube, ovate or lanceolate, often acuminate. *Corolla-tube* campanulate or subcampanulate; lobes 5, shorter than the tube, ovate or transversely oblong, sometimes acuminate. *Disc* sometimes present, cup-like. *Stamens* 5, inserted at the base of the corolla-tube, usually exserted; anthers sessile, lanceolate, acuminate, conniving at the apex, hairy on the back. *Ovary* 4-lobed, 4-chambered, very rarely 5—6-chambered, with a single subhorizontal ovule fixed to the inner angle of each chamber; style subterminal, terete, narrowing above, included or exserted; stigma simple. *Fruit* of 4 nutlets, enclosed in the enlarged angled winged or auricled persistent calyx; nutlets ovate in outline, plano-convex or biconvex, rugose or tuberculate, sometimes smooth on the back, sometimes with a toothed marginal wing or pectinate on the margins with stiff teeth, sometimes spiny on the back. *Embryo* straight; cotyledons obovate, radicle small, conical; endosperm 0.

Erect herbs, often from a woody rootstock, usually hispid and covered with calcified tubercules; leaves opposite or alternate, sessile, linear, lanceolate, or elliptic-lanceolate, entire; inflorescence a terminal racemose cyme, unilateral, simple or bifid, usually bracteate, sometimes the flowers solitary and axillary.

Species about 12, distributed in the tropics and subtropics of Asia, Africa, and Australia; 3 or 4 species in South Africa found in South West Africa, the Transvaal, the Orange Free State, and several of the north-western and central districts and as far south as the Ceres district. (Type: *T. zeylanica* (Linn.) R. Br.)

7064 **6. CYNOGLOSSUM** Linn., Sp. Pl., ed. 1, p. 134 (1753)

Calyx shorter or about as long as the corolla; tube shallow; lobes 5, much longer than the tube, oblong, elliptic, ovate-elliptic, or ovate. *Corolla-tube* campanulate, with swollen appendages in the mouth opposite the lobes; lobes shorter than the tube, ovate-elliptic, ovate, or obovate. *Stamens* attached to the corolla-tube, included; anthers subsessile, oblong. *Ovary* distinctly 4-lobed, 4-chambered, with a single ovule in each chamber fixed to the central angle; style terete, included; stigma flat or subcapitate, sometimes faintly 2-lobed. *Fruit* of 4 nutlets, depressed, scarcely produced at the apex beyond the conical receptacle, convex or flat on the dorsal side or surrounded by an elevated margin, glochidiate. *Embryo* straight; cotyledons flat, obovate, or suborbicular; radicle small, conical; endosperm 0.

Perennial or biennial herbs, slightly branched, canescent, villous, strigose or almost woolly; leaves alternate; the radical leaves often long-petioled, lanceolate; the cauline leaves usually sessile; inflorescence usually an elongated raceme, sparingly branched or loosely paniced, rarely bracteate; flowers blue or violet, rarely white, with distinct veins, pedicelled or subsessile; pedicels usually recurved in fruit.

Species about 60, found in the temperate and subtropical regions of both hemispheres; 5 species in South Africa, widely distributed. (Type: *C. officinale* Linn.)

7072 **7. TYSONIA** Bolus in Hook. Ic., Pl. 1942 (1891)

Calyx shorter than the corolla; tube very shallow; lobes 5, oblong. *Corolla-tube* campanulate, with 5 erect quadrate-oblong appendages in the throat opposite the lobes and about 10 small swellings at the base; lobes 5, as long as the tube, elliptic. *Stamens* 5, inserted in the throat of the corolla-tube, exerted; filaments linear, slightly widened at the base; anthers oblong, versatile. *Ovary* seated on a thick semiglobose torus, 4-lobed at the apex, 4-chambered, with a horizontal ovule fixed to the inner angle of each chamber; style exerted, simple, terete, narrowing upwards; stigma capitate. *Fruit* of 1—3 nutlets, obovate in outline, flat on one face, convex on the other, glochidiate. *Embryo* straight; cotyledons obovate; radicle conical; endosperm 0.

A large herb; leaves alternate, larger at the base of the stem, long-lanceolate, narrowed to the base but not distinctly petioled; inflorescence a large lax terminal panicle of cymes.

Endemic; species 1, recorded from Natal and Griqualand East. (Type: *T. africana* Bolus)

NOTE.—The drawing of the fruit in the above-mentioned plate is not that of *Tysonia*, as was first pointed out to me by Dr. I. M. Johnston of the Arnold Arboretum.—E. P. P.

7073 **8. LAPPULA** Moench., Meth., p. 416 (1794)
(*Echinosperrum* Swartz)

Calyx almost as long as the corolla; tube very shallow; lobes 5, linear. *Corolla-tube* subcampanulate, with 5 scales in the throat opposite the lobes; lobes 5, oblong-elliptic. *Stamens* fixed to the corolla-tube, included; anthers subsessile. *Ovary* shortly 4-lobed, 4-chambered, with a single laterally

fixed ovule in each chamber; style situated between the lobes of the ovary, very short, terete; stigma subcapitate. *Fruit* of 4 nutlets; nutlets lanceolate in outline, erect, keeled on the inner face and often bordered by one or more rows of glochidiate prickles, with the tips projecting considerably above their surface of attachment. *Embryo* straight; cotyledons flat, elliptic; radicle conical; endosperm 0.

Annual or perennial herbs, usually erect, virgate or much branched, canescent, villous, or glabrescent; leaves alternate, linear; inflorescence a raceme, bracteate or naked towards the apex; flowers small, sessile or pedicelled; pedicels sometimes thickened in the fruits.

Species about 50, found chiefly in the temperate regions of Europe and Asia; a few in North America and Australia; 4 species in South Africa, widely distributed but absent from the south-western districts. (Type: *L. myosotis* Moench.)

7082 9. AMSINCKIA Lehm., Delect. Semin. Horti Hamburg, p. 7 (1831)

Calyx as long as the corolla; lobes 5, linear. *Corolla-tube* more or less cylindric, naked in the throat, swollen at the base; lobes 5, oblong, very much shorter than the tube. *Stamens* fixed in the upper part of the corolla-tube; anthers subsessile, oblong. *Ovary* 4-lobed, 4-chambered, with a single ovule in each chamber; ovules with a narrow membranous erect marginal rim; style arising from between the ovary-lobes, almost as long as the corolla-tube, cylindric; stigma capitate. *Fruit* of 4 nutlets; nutlets ovate in outline, convex on the back, keeled on the face and back, with the tips projecting beyond the point of attachment, rugose and tuberculate. *Embryo* straight; cotyledons elliptic, each divided to the base; radicle conical; endosperm 0.

Annual herbs, often laxly decumbent, hispid or setose; leaves alternate, often lanceolate; inflorescence spicate at the ends of the branches.

Species about 6, natives of the Pacific coast of North America, Mexico, and Chile; 1 species recorded from Namaqualand. (Type: *A. angustifolia* Lehm.)

7093 10. ANCHUSA Linn., Sp. Pl., ed. 1, p. 133 (1753)

Calyx about $\frac{3}{4}$ as long as or as long as the corolla-tube, a little enlarged in the fruit; tube campanulate; lobes 5, oblong, as long as the tube. *Corolla-tube* tubular, then widening slightly above, with 5 large hairy appendages in the throat opposite the lobes; lobes 5, shorter than the tube, obovate or ovate-elliptic, imbricate. *Stamens* 5, fixed to the middle of the corolla-tube, included; filaments filiform; anthers longer than the filaments, linear. *Ovary* distinctly 4-lobed, 4-chambered, on a small flat disc, with a single ovule in each chamber; style as long as the corolla-tube, semi-terete; stigma capitate. *Fruit* of 4 nutlets; nutlets strongly convex on the back, flat on the face with a pronounced marginal rim on the flattened face. *Embryo* straight; cotyledons elliptic or ovate, flat, sometimes plano-convex; radicle a small cone not differentiated from the cotyledons; endosperm 0.

Annual or perennial hispid villous bristly or scabrid herbs, sometimes from a woody rootstock; leaves alternate, sessile, linear or linear-lanceolate; inflorescence a dichotomous cyme or a simple unilateral raceme, terminal, usually at length loosely paniced, sometimes without bracts; flowers blue, violet, or white, rarely yellowish.

Species about 30, natives of Europe, western Asia and North Africa; 3 species in South Africa recorded from South West Africa, Bechuanaland, the Transvaal, Basutoland, the Orange Free State, extending into Tembuland and to the Albany and Swellendam districts; also recorded from Griqualand West and some of the north-western, central, and south-western districts of the Cape Province. (Type: *A. officinalis* Linn.)

7100

11. MYOSOTIS Linn., Sp. Pl., ed. 1, p. 31 (1753)

Calyx as long as or longer than the corolla-tube; tube shallowly campanulate; lobes 5, longer than the tube, oblong-lanceolate. *Corolla-tube* somewhat campanulate, naked in the throat or with appendages opposite the lobes and the appendages glabrous or hairy; lobes 5, about as long as the tube, obovate, contorted to the right. *Stamens* 5, fixed to the corolla-tube, included or exserted; filaments usually short, sometimes almost absent; anthers longer than the filaments, oblong, sometimes almost sessile. *Ovary* on a flat disc, 4-lobed, 4-chambered, with a single ovule in each chamber; style simple, about as long as the corolla-tube, often slender; stigma small, entire or slightly 2-lobed. *Fruit* of 4 nutlets; nutlets erect, hard, smooth, shining, biconvex. *Embryo* straight; cotyledons ovate or elliptic, flat or plano-convex; radicle a small blunt cone not differentiated from the cotyledons.

Annual or perennial herbs, villous or more rarely glabrous; leaves alternate, petioled or sessile, lanceolate, oblanceolate, lanceolate-linear, or obovate; inflorescence a simple or branched racemose cyme, ebracteate or more rarely with a few leafy bracts at the base; flowers blue, red, or white.

Species about 40, widely spread in the temperate regions of the Old World; 5 species in South Africa, found in the north-eastern Transvaal, Natal, Basutoland, the eastern Orange Free State, the north-eastern districts of the Cape Province, and extending in the coastal area to the Caledon district. (Type: *M. scorpioides* Linn.)

7109

12. LITHOSPERMUM Linn., Sp. Pl., ed. 1, p. 132 (1753)

Calyx about as long as the corolla-tube; tube shallow; lobes 5, much longer than the tube, lanceolate. *Corolla-tube* subcampanulate, with 5 hairy cushions in the throat opposite the lobes or with 5 folds intruded from the outside; lobes 5, shorter than the tube, oblong or obovate-oblong, imbricate. *Stamens* 5, fixed to the corolla-tube, included; filaments short; anthers longer than the filaments, linear-oblong. *Ovary* on a flat disc, distinctly 4-lobed, 4-chambered with a solitary ovule in each chamber; style simple, almost as long as the corolla-tube; stigmas subcapitate, faintly lobed. *Fruit* of 4 nutlets; nutlets white, bony, ovate in outline, convex on the back, keeled on the face, rugose. *Embryo* slightly curved; cotyledons thick, plano-convex; radicle conical, scarcely differentiated from the cotyledons; endosperm 0.

Herbs, undershrubs, or shrubs, sometimes with a woody rootstock, roughly canescent or hispid; leaves alternate, usually sessile, linear, linear-lanceolate, or lanceolate; inflorescence a leafy spike, raceme, or cyme, or flowers solitary in the axils of the upper leaves; flowers white, yellow, bluish, or violet.

Species about 40, found chiefly in the extra-tropical region of the northern hemisphere, a few in South America; 11 species recorded from South Africa fairly widely distributed. (Type: *L. officinale* Linn.)

7117

13. LOBOSTEMON Lehm., in Linnaea, vol. 5, p. 378, tab. 5, fig. 1 (1830)

Flowers bisexual, 5-merous. *Sepals* free or nearly so, rarely joined for part of their length, similar or dissimilar. *Corolla* tubular or funnel-shaped, regular or zygomorphic; lobes equal or two larger than the rest, erect or spreading. *Stamens* 5, epipetalous, exserted or included; filaments well developed, equal or unequal, with a densely hairy scale, ridge, or protuberance at the base where attached to the corolla, otherwise glabrous; anthers subglobose, obtuse. *Ovary* 4-lobed, on a flat or slightly convex disc; style simple, gynobasic, glabrous or hairy; stigma minutely bilobed.

Fruit of 4 nutlets; nutlets distinct, attached by a flat base, erect, ovoid-trigonal or acuminate, tuberculate or rugose-tuberculate, rarely almost smooth, occasionally with tufts of glass-like spicules on the tubercles. *Seeds* straight.

Shrubs or undershrubs, rarely almost herbaceous, scabro-canescens or hairy, rarely almost glabrous; leaves alternate, sessile, hairy, or nearly glabrous, sometimes armed with spiny hairs; inflorescence of few or many scorpioid cymes, rarely reduced to a pseudo-spike; cymes more or less elongated in fruit; flowers commonly blue, sometimes red, pink, white, or greenish yellow; bracts usually conspicuous.

Endemic; species 28, mostly massed in the south-western districts of the Cape Province, a few species extend into Namaqualand and to the Port Elizabeth and Albany districts eastwards. (Type: *L. echiioides* Lehm.)

NOTE.—Description modified from Dr. M. R. Levyns's description.—E. P. P.

7117a **14. ECHIOSTACHYS** Levyns, in Journ. Linn. Soc. London, vol. 49, p. 445 (1933)

Flowers bisexual, 5-merous. *Sepals* free or nearly so, equal, linear or spatulate, accrescent. *Corolla* narrowly funnel-shaped; lobes regular, obtuse. *Stamens* equal or subequal, epipetalous, exerted; filaments with hairs at or near the base, with the hairs sometimes tufted; anthers subglobose or oblong, obtuse. *Ovary* 4-lobed, on a flat or slightly convex disc; style simple, gynobasic; stigma small, hardly bifid. *Fruit* of 4 nutlets; nutlets rugose-tuberculate or almost smooth.

Perennial herbs with somewhat woody underground stems giving off tufts of leaves and flowering shoots annually; stems and leaves usually hairy; inflorescence a dense pseudo-spike, occasionally interrupted at the base, composed of numerous short cymose branches densely arranged around a stout central axis which rarely branches, usually hairy; cymules elongating somewhat in the fruiting stage; flowers white, cream, purple, or red.

Endemic; species 3, confined to the south-western districts of the Cape Province. (Type: *E. incanus* (Lam.) Levyns)

NOTE.—Description taken from Dr. M. R. Levyns's description.—E. P. P.

7118 **15. ECHIUM** Linn., Sp. Pl., ed. 1, p. 139 (1753)

Flowers 5-merous, bisexual. *Calyx* divided almost to the base, much shorter than the corolla; lobes often lanceolate, acuminate, and sparsely bristly with hairs from a tubercled base, often with a prominent midrib. *Corolla* bilabiate; tube often funnel-shaped; lobes very short, obtuse, sometimes sparsely pilose and ciliate. *Stamens* sometimes unequal, 2 inserted near the base of the corolla-tube, 3 inserted higher up, with the longer stamens exerted; filaments linear, glabrous or with a few long hairs; anthers oblong, versatile. *Disc* sometimes cup-shaped and surrounding the ovary. *Ovary* 4-lobed, with a single ovule in each chamber; style gynobasic, about as long as the corolla-tube, linear, shortly bifid, sometimes pilose; stigmas obtuse. *Nutlets* convex on one face, bluntly keeled on the other face, tuberculate. *Embryo* straight; cotyledons elliptic; radicle stout, conical; endosperm 0.

Herbs or shrubs, scabrid, hispid, or canescent; leaves alternate; inflorescence a unilateral scorpioid cyme, simple or forked; bracts small or large and leafy; flowers blue, violet, or red, rarely white.

Described species about 40, but probably several not belonging to the genus; found in Europe, western Asia, North Africa, the Canary Islands and the Azores; 2 species in South Africa found in the south-western districts. (Type: *E. vulgare* Linn.)

7131 16. WELLSTEDIA Pilger, in Engl. Bot. Jahrb., vol. 46, p. 558 (1912)

Flowers bisexual, 4-merous. *Calyx* strigose with long hairs; tube shortly campanulate; lobes linear, slightly shorter than the corolla. *Corolla-tube* somewhat campanulate, slightly constricted at the throat, membranous; lobes ovate, about as long as the tube. *Stamens* inserted in the corolla-throat, shorter than the corolla-lobes; filaments linear, glabrous; anthers subglobose, about as long as the filaments. *Ovary* entire, flattened, 2-chambered, with a single ovule in each chamber, strigose; style terminal, divided to about the middle; stigma small, globose. *Fruit* not seen.

Small plants with short stems from the crown of a long tap-root; stems hairy and with strigose hairs from tuberculed bases; leaves linear, attenuate at the base, with strigose hairs from tuberculed bases; flowers in dense glomules.

Endemic; species 1, recorded from South West Africa. (Type: *W. dinteri* Pilger)

NOTE.—Fig. G in the *Jahrbucher* does not truly represent the ovary; the style is divided to almost half its length and the stigmas are globose.—E. P. P.

161. VERBENACEAE

Flowers bisexual, rarely with occasional unisexual flowers, irregular or regular. *Calyx* persistent, sometimes enlarged in the fruit, usually gamosepalous, more rarely divided to the base, campanulate, tubular, cup-shaped, or rotate, with 4—5, rarely 6—8, lobes or teeth, rarely subtruncate. *Corolla* gamopetalous; tube usually cylindric or dilated above, sometimes tubular, often curved, sometimes somewhat gibbous at the base, sometimes hairy in the throat; limb 4—5- (rarely many-) lobed, regular or more or less 2-lipped. *Stamens* normally 4, usually didynamous, rarely 2 or 5, inserted on the corolla-tube and alternating with the corolla-lobes; filaments often long and exserted, more rarely about the length of the anthers, sometimes hairy at the base; anthers with 2 distinct parallel or divergent thecae. *Staminodes* rarely present. *Disc* usually inconspicuous, sometimes thickened and fleshy beneath the ovary, very rarely annular. *Ovary* superior, entire or lobed, 2—4- (rarely 8-) chambered, with a single ovule in each chamber, often hairy and glandular on the upper part; style usually linear, often much exserted, rarely short and fleshy, entire, bifid, more rarely 4-lobed, at the apex. *Ovules* erect, pendulous or laterally attached to the infolded margins of the carpels or rarely to a central column. *Fruit* usually more or less drupaceous. *Seed* usually with a membranous testa; cotyledons flat, rarely longitudinally folded; radicle rarely villous; endosperm fleshy or 0.

Herbs, shrubs, or trees; branches often 4-angled; leaves, except in a few genera, opposite or whorled, entire, toothed, incised, more rarely digitately compound, sometimes ericoid; stipules 0; inflorescence a spike, raceme, or cymose; bracts usually small.

Genera about 73 with close on 2,000 described species, found in the tropical regions of both hemispheres; very few in subtropical and temperate areas.

1. Fertile stamens 2	...	...	...	9. <i>Stachytarpheta</i> Vahl	
Fertile stamens 4	...	...	...	...	2
2. Ovary 8-chambered	...	...	...	11. <i>Duranta</i> Linn.	
Ovary 2-chambered	...	...	...	or imperfectly 4-chambered	3
3. Ovules 2	...	...	...	...	4
Ovules 4	...	...	...	...	10

- | | |
|--|--------------------------------|
| 4. Corolla hairy in the throat | 5 |
| Corolla naked in the throat | 8 |
| 5. Corolla 2-lipped | 6 |
| Corolla not 2-lipped | 7 |
| 6. Calyx regular; tube 5-angled ... | 4. <i>Eurylobium</i> Hochst. |
| Calyx 2-lipped; tube not angled ... | 3. <i>Xeroplana</i> Briq. |
| 7. Ovary 2-lobed; bracts sheathing at the base | 1. <i>Campylostachys</i> Kunth |
| Ovary entire; bracts not sheathing at the base | 2. <i>Stilbe</i> Berg. |
| 8. Calyx 2-keeled | 7. <i>Lippia</i> Linn. |
| Calyx 4—5-ribbed | 9 |
| 9. Calyx truncate or 5-toothed; style with a heel-like bend at the apex | 8. <i>Chascanum</i> E. Mey. |
| Calyx 4-toothed; style without a heel-like bend at the apex | 6. <i>Lantana</i> Linn. |
| 10. Style fleshy, conical, shorter than the ovary | 17. <i>Avicennia</i> Linn. |
| Style long-linear, usually exserted | 11 |
| 11. Calyx 5-angled or 5-ribbed | 12 |
| Calyx not angled or ribbed | 13 |
| 12. Fruit separating into four 1-seeded cocci | 5. <i>Verbena</i> Linn. |
| Fruit separating into two 2-seeded cocci | 10. <i>Priva</i> Adans. |
| 13. Calyx membranous and much enlarged in fruit | 16. <i>Holmskioldia</i> Retz. |
| Calyx not membranous and much enlarged in fruit | 14 |
| 14. Leaves usually digitately compound | 13. <i>Vitex</i> Linn. |
| Leaves simple | 15 |
| 15. Corolla with a distinct palate ... | 12. <i>Premna</i> Linn. |
| Corolla without a palate | 16 |
| 16. Calyx shallowly cup-shaped; corolla bilabiate | 14. <i>Gmelina</i> Linn. |
| Calyx tubular or campanulate; corolla 5-lobed, sometimes slightly bilabiate | 15. <i>Clerodendrum</i> Linn. |

7133 1. **CAMPYLOSTACHYS** Kunth, in Abh. Akad. Berlin, p. 206 (1831)

Flowers bisexual, regular. *Calyx* deeply 5-cleft, shorter than the corolla; segments lanceolate, deeply channelled. *Corolla* 4- (rarely 5-) lobed; tube slightly shorter or longer than the lobes; tube narrowly campanulate or cylindric below and narrowly campanulate above, hairy in the throat; lobes elliptic or oblong. *Stamens* 4, equal, exserted, inserted between the corolla-lobes; filaments terete; anthers 2-theous, with the thecae separated below. *Ovary* 2-lobed, 2-chambered, with a single erect basal ovule in each chamber; style in mature flowers either slightly shorter or longer than the stamens, terete; stigma simple or minutely 2-lobed. *Fruit* shorter than the

calyx, oblong-ovate in outline, at first 2-grooved, later dehiscent by 4 valves. *Seed* solitary, erect, ellipsoid, semitranslucent, reticulated.

Erect ericoid shrubs; leaves crowded in whorls, subulate or linear-subulate, with revolute margins; inflorescence a short capitate terminal spike, sessile among the leaves; flowers solitary in the axils of the bracts; bracts subulate above the middle, much broadened and sheathing at the base; bracteoles 2, subulate, oblique, keeled.

Endemic; species 1, extending from the Cape Peninsula to the Swellendam district. (Type: *C. cernua* (Linn. fil.) Kunth)

7134

2. *STILBE* Berg., Descr. Pl. Cap., p. 30, t. 4 (1767)

Flowers bisexual, regular. *Calyx* sometimes divided almost to the base or tubular or with a shallow campanulate tube; segments longer or shorter than the tube, ovate or lanceolate-acuminate, densely villous or almost glabrous, sometimes ciliate. *Corolla-tube* tubular below, campanulate above, longer or almost as long as the lobes, with a ring of white hairs in the throat, sometimes glandular; lobes linear or oblong-elliptic, pilose. *Stamens* 4, inserted in the corolla-mouth, exserted; filaments terete. *Ovary* entire, 2-chambered with a single ovule in each chamber; style terete, longer or shorter than the stamens; stigma simple, rarely minutely bifid. *Fruit* oblong in outline, enclosed in the calyx, 2-lobed, 2-locular or, by abortion, 1-locular and 1-seeded, indehiscent. *Seed* erect; testa reticulated.

Erect ericoid shrubs, rarely dwarf; leaves in whorls of 3—7, erect, spreading, or reflexed, with revolute margins, passing upwards into bracts; inflorescence a dense terminal spike, sessile among the upper leaves; bracteoles 2, narrow.

Endemic; species 6, extending from the Clanwilliam to the Riversdale district. (Type: *S. vestita* Berg.)

7136

3. *XEROPLANA* Briq., in Engl. & Prantl, Pflanzenfam., vol. 4, 3a, p. 379 (1897)

Flowers bisexual, bilabiate. *Calyx* 5-toothed, 2-lipped; tube narrow; upper lip 3-toothed; lower lip of 2 free lobes. *Corolla* 2-lipped; tube slender, cylindric, slightly dilated at the mouth, more or less pilose within at the throat; upper lip of 2 free segments; lower lip much shorter than the upper lip, of 3 equal segments. *Stamens* 4, subequal, inserted in the corolla-throat between the segments, exserted; anthers with parallel thecae. *Ovary* 2-chambered, with a single erect basal ovule in each chamber; style exserted, slightly capitellate at the apex. *Mature fruit* unknown.

A low branched ericoid shrub; leaves in whorls of 3, crowded, with revolute margins; inflorescence a terminal spike, sessile among the upper leaves; flowers solitary, sessile in the axils of leaf-like bracts; bracteoles 2, shorter than the flowers.

Endemic; species 1, locality unknown. (Type: *X. zeyheri* Briq.)

7137

4. *EURYLOBIUM* Hochst., in Flora, vol. 25, p. 228 (1842)

Flowers bisexual, irregular. *Calyx* submembranous, 5-toothed; tube 5-angled; teeth equal, ovate, acuminate, with membranous margins, ciliate. *Corolla* 2-lipped; tube narrowly funnel-shaped, bearded within the throat, glandular within and without; upper lip 2-lobed, larger than the lower lip; lower lip 3-partite, with the lobes ovate. *Stamens* 4, exserted, inserted in the throat of the corolla; filaments terete; anther-thecae divergent below. *Ovary* entire, 2-chambered, with a single ovule in each chamber; style longer than the corolla, terete; stigma simple.

Low ericoid shrubs; leaves crowded in whorls, with revolute margins; inflorescence a terminal compact spike, sessile among the upper leaves; flowers solitary in the axils of leaf-like bracts; bracteoles 2.

Endemic; species 1, recorded from the Caledon district. (Type: *E. serrulatum* Hochst.)

7138

5. *VERBENA* Linn., Sp. Pl., ed. 1, p. 18 (1753)

Flowers bisexual, irregular. *Calyx* 5-toothed, less than $\frac{1}{2}$ as long as or only slightly shorter than the corolla-tube; tube tubular or oblong in outline, 5-angled, with glandular hairs; teeth ovate, subacuminate. *Corolla* distinctly bilabiate or subbilabiate; tube tubular, with glandular hairs on the upper portion; lobes obovate or elliptic-oblong. *Stamens* 4, inserted half-way down the corolla-tube; filaments linear, scarcely twice as long, or about as long, as the anthers; anther-thecae parallel, scarcely diverging at the base. *Ovary* 4-lobed, 4-chambered, with a single ovule in each chamber; style terete, about $\frac{1}{2}$ as long as the corolla-tube; stigma 2-lobed, sometimes the lobes unequal. *Fruit* separating into 4 narrow cocci. *Seed* oblong in outline, convex and ribbed on one face, somewhat keeled and granular on the other face; embryo straight; cotyledons flat; radicle stout; endosperm 0.

Herbs or low shrubs; leaves opposite, seldom whorled or alternate, toothed, often incised or partite, seldom entire; inflorescence a terminal, seldom axillary, spike, densely crowded or elongate, often corymbose or paniced; bracts narrow.

Described species about 260, found in the tropical and extra-tropical regions of the New World; a few also in the Old World; 3 species (introduced) in South Africa, widely distributed. (Type: *V. officinalis* Linn.)

7144

6. *LANTANA* Linn., Sp. Pl., ed. 1, p. 626 (1753)

Flowers bisexual, usually irregular. *Calyx* tubular or subcampanulate, shorter than the corolla-tube, sometimes 4-ribbed, 4-toothed or 2-lipped, pubescent without, sometimes ciliate. *Corolla* subbilabiate, 4—5-lobed; tube cylindric, often glandular hairy without, naked in the throat; lobes subovate. *Stamens* 4, didynamous, inserted about the middle of the corolla-tube, included; filaments linear, about as long as the anthers; anthers ovate. *Ovary* 2-chambered, with a single erect basal ovule in each chamber; style subterete, less than $\frac{1}{2}$ as long as the corolla-tube; stigma thickened, oblique or sublateral. *Fruit* drupaceous, sometimes globose, 2-locular or separating when ripe into two 1-locular 1-seeded portions, hirsute or glabrous. *Seed* somewhat oblong in outline; embryo straight; cotyledons obovate; radicle small; endosperm 0.

Shrubs, seldom herbs, sometimes with a large woody rootstock, erect, scabrid, pubescent or tomentose; leaves opposite, toothed, serrate or crenate, usually rugose; inflorescence (in the South African species) an axillary peduncled many-flowered spike, contracted into small subglobose or cylindric heads; flowers solitary in the axils of the bracts; bracteoles minute or 0.

Described species between 150 and 160, mostly tropical American; 3 species (1 introduced) in South Africa, widely spread. (Type: *L. trifolia* Linn.)

7145

7. *LIPPIA* Linn., Sp. Pl., ed. 1, p. 633 (1753)

Flowers bisexual, sometimes irregular. *Calyx* shorter than the corolla, 2—4-lobed, 4-toothed or more or less truncate, 2-keeled, slightly accrescent, ultimately 2-valved, enclosing and sometimes adhering to the fruit, sometimes hirsute, scabrid on the keels. *Corolla* 4-lobed or subbilabiate; tube subcampanulate, or tubular below and campanulate above, or tubular; lobes broad, frequently emarginate. *Stamens* 4, didymous, inserted near the middle of the corolla-tube, included or somewhat exserted; filaments usually shorter

than the anthers; anthers with parallel thecae. *Ovary* 2-chambered, with a single erect basal ovule in each chamber; style longer or shorter than the ovary; stigma terminal, oblique or recurved, thickened. *Fruit* small, with a dry epicarp, enclosed in the slightly accrescent closely adpressed calyx, easily separable into two 1-seeded portions, hairy; testa crustaceous; embryo straight; cotyledons flat, oblong; radicle small; endosperm 0.

Shrubs or undershrubs, rarely herbs; leaves opposite or in whorls of 3 (occasionally 4), rarely alternate; inflorescence an elongated and lax cylindric dense spike or a short and subglobose spike, becoming more or less cylindric as the fruit matures.

Described species about 240, chiefly natives of tropical America; a few in tropical Africa; 8 species in South Africa extending from the Transvaal and Natal to Grahamstown; also found in the Orange Free State and Bechuanaland; 1 species recorded from the Cape. (Type: *L. americana* Linn.)

7148 8. CHASCANUM E. Mey., Comm. Pl. Afr., vol. 1, fasc. 2, p. 275 (1837)

(*Bouchea* Cham. of the Fl. Cap.)

Flowers bisexual, irregular. *Calyx* shorter than the corolla-tube, obliquely truncate or 5-toothed; tube narrow, prominently 5-ribbed, usually becoming more or less dilated below as the fruit ripens, at length splitting longitudinally in front, sometimes glandular hairy or setose. *Corolla* 5-lobed, bilabiate; tube slender, cylindric; lobes obovate or broadly elliptic, obtuse or emarginate. *Stamens* 4, didynamous, inserted in the upper part of the corolla-tube, included; filaments linear, longer than the anthers, sometimes glandular; anthers with parallel thecae. *Ovary* 2-chambered, with a single erect basal ovule on a short stalk in each chamber; style almost as long as the corolla-tube, linear, with a heel-shaped bend above; stigma capitate or spatulate. *Fruit* usually shorter than the calyx-tube and enclosed in it, either not splitting or splitting into two 1-seeded cocci. *Cocci* linear in outline, convex and sometimes sculptured on the back, flat with a median keel on the face. *Seed* straight; testa membranous; cotyledons linear; radicle conical; endosperm 0.

Perennial herbs or low undershrubs, sometimes with a strong tap-root; leaves opposite or subopposite, toothed or incised, seldom entire; inflorescence a terminal spike or a simple spicate raceme; bracts small, usually narrow; bracteoles minute or 0.

Species 23, widely distributed from Egypt southwards through Abyssinia to Angola, South West Africa to the Cape; also recorded from Madagascar; 13 species found in South Africa, extending from the Transvaal to the Cape, also found in Natal. (Type: *C. cernuum* (L.) E. Mey.)

7151 9. STACHYTARPHETA Vahl, Enum., vol. 1, p. 205 (1805)

Flowers bisexual, regular or slightly irregular. *Calyx* shorter than the corolla-tube, 5-toothed; tube cylindric, 5-ribbed; teeth sometimes unequal. *Corolla-tube* cylindric, sometimes hairy in the throat; lobes 5, orbicular or obovate, equal or unequal. *Stamens* 2, inserted on and included in the corolla-tube; filaments slightly larger than the anthers; anther-thecae widely diverging; staminodes 2 or 3, linear or minute. *Ovary* entire, 2-chambered, with a single ovule in each chamber; style about as long as the corolla-tube, terete; stigma capitate. *Fruit* cylindric, separating into two long narrow truncate pyrenes. *Seed* linear; endosperm 0.

Herbs or undershrubs; leaves usually opposite, petioled, toothed; inflorescence a long spike with the rachis usually thickened and hollowed out to form a cavity in which the flowers are immersed; bracts lanceolate, rigid, persistent.

Described species about 100, nearly all confined to South America, a few species in Java and in tropical Africa; 1 species recorded from Natal.

7153 10. PRIVA Adans., Fam. Pl., vol. 2, p. 505 (1763)

Flowers bisexual, irregular. *Calyx* shorter than the corolla-tube, shortly 5-toothed or almost truncate; tube prominently 5-ribbed, sometimes glandular-hairy. *Corolla* 5-lobed, sub-2-lipped; tube tubular, sometimes somewhat campanulate above, sometimes hairy within; lobes obovate. *Stamens* 4, didynamous, inserted at the middle of the corolla-tube, sometimes a staminode present; filaments linear, longer than the anthers, sometimes sparsely hairy. *Ovary* 4-chambered, with a single basal erect ovule in each chamber; style about as long as the corolla-tube, unequally 2-lobed above. *Fruit* dry, enclosed in the dilated calyx-tube, separating when ripe into two 2-locular 2-seeded (or by abortion 1-seeded) cocci. *Cocci* with protuberances or ridges on the dorsal surface, usually flat and keeled on the ventral surface. *Seed* slightly falcate; testa membranous, reticulated; cotyledons oblong; radical conical; endosperm 0.

Erect perennials, sometimes with a distinct tap-root, mostly harshly pubescent; leaves opposite or subopposite, mostly dentate, sessile or petioled; inflorescence a simple spike or spicate raceme, terminal or axillary, pedunculate, elongated; bracts small, narrow; bracteoles minute or absent.

Species 16, natives of Africa, Asia Minor and Central America; 4 species in South Africa ranging from the Transvaal through Natal to the Somerset East and Bathurst districts. (Type: *P. lappulacea* (L.) Pers.)

7162 11. DURANTA Linn., Sp. Pl., ed. 1, p. 637 (1753)

Flowers bisexual, regular. *Calyx* shorter than the corolla-tube, truncate or 5-toothed; tube elongate-campanulate, 5-ribbed, sometimes pubescent; teeth, when present, shortly linear or minute. *Corolla-tube* broadly cylindric, sometimes pubescent without and with scattered glandular hairs in the mouth; lobes 5, often suborbicular, equal or unequal. *Stamens* 4, didymous, inserted at or above the middle of the corolla-tube, included; filaments linear, longer than the anthers; anthers with distinct parallel thecae. *Gynaecium* of 4 carpels; ovary more or less perfectly 8-chambered, with a solitary erect basal ovule in each chamber; style shorter than the corolla-tube, linear; stigma of 4 cushion-like lobes. *Drupe* completely or nearly enclosed in the accrescent calyx; epicarp juicy; endocarp bony; pyrenes 4, each 2-locular and 2-seeded.

Shrubs, unarmed or with axillary or supra-axillary spines; leaves opposite or whorled, entire or toothed; inflorescence a terminal, rarely axillary raceme which is usually paniced; bracts small.

Described species 23, mostly natives of tropical and South America; 1 species, introduced, recorded from the Transvaal and Natal. (Type: *D. erecta* Linn.)

7185 12. PREMNA Linn., Mant., vol. 2, p. 154 (1771)

Flowers bisexual or polygamous, sometimes bilabiate. *Calyx* usually shorter than the corolla-tube, subentire or minutely 2—5-toothed or distinctly 5-lobed, sometimes glandular, hairy; tube cup-shaped or campanulate; lobes when present longer or shorter than the tube and often ovate. *Corolla-tube* sometimes somewhat curved and gibbous at the base; limb 2-lipped, 5-lobed, or subequally 4-lobed, often hairy within, when 2-lipped the anterior lip 3-lobed and the posterior lip 2-lobed and with 2 cushions on the palate. *Stamens* 4, subdidymous, inserted in or near the throat of the corolla-tube, sometimes slightly projecting; filaments often linear; anther-theca divergent. *Ovary* 2- or 4-chambered, with 4 ovules; style terete, exerted, shortly 2-lobed above. *Fruit* a drupe; endocarp bony. *Seed* straight; testa membranous; tegmen somewhat fleshy; cotyledons flat, elliptic; radicle distinct, ellipsoid.

Trees or shrubs, sometimes climbing; leaves opposite, entire or toothed; inflorescence of corymbose or paniced cymes; bracts small.

Described species about 200, natives of the warmer regions of the Old World, many found in India; 1 species recorded from the Transvaal, Zululand, Natal, and from the Willowvale and Kentani districts.

NOTE.—The South African species is that described by Pearson as *Vitex moolensis* in the *Flora Capensis* and transferred to the genus *Premna* by Pieper in *Engl. Bot. Jahrb.*, vol. 62, beibl. 141, p. 80 (1928).—E. P. P.

7186 13. VITEX Linn., Sp. Pl., ed. 1, p. 638 (1753)

Flowers bisexual, regular or irregular. *Calyx* shorter than the corolla-tube, usually campanulate, truncate or 5-lobed, glandular-pubescent, persistent; lobes ovate. *Corolla* 5-lobed, bilabiate, or subbilabiate; tube cylindric or elongate-campanulate, pubescent without; lobes elliptic, ovate, or obovate, glandular on the face. *Stamens* 4, didymous, exserted or included; filaments inserted at the middle of the corolla-tube, thick, glandular, hairy at the base; anther-thecae diverging. *Ovary* thick-walled, incompletely 4-chambered, with a single ovule in each chamber, often glandular on the upper part; style usually exserted, stout, terete, 2-armed above. *Fruit* a drupe, sometimes the size of a large grape, rarely enclosed in the enlarged calyx; endocarp woody. *Seed* straight; testa membranous; cotyledons flat.

Trees or shrubs, usually with depressed sessile glands on the leaves and flowers; leaves opposite, rarely in whorls of 3, frequently digitately compound with 3—7 leaflets, sometimes 1-foliolate and simple; inflorescence an axillary sessile or pedunculate cyme, with the cymes arranged in a terminal panicle or rarely contracted and capitate; bracts small, seldom exceeding the calyx.

Described species about 125 found in most warm countries, common in Africa and Madagascar; 7 species in South Africa, recorded from the Transvaal, Zululand, British Bechuanaland, and also from the Komgha district. (Type: *V. agnus-castus* L.)

7188 14. GMELINA Linn., Sp. Pl., ed. 1, p. 626 (1753)

Flowers bisexual, irregular. *Calyx* much shorter than the corolla-tube, cup-shaped, obscurely 5-toothed, pubescent and with a few scattered discoid glands. *Corolla* bilabiate; tube tubular below, campanulate above, sometimes pubescent without; upper lip entire; lower lip 3-lobed. *Stamens* 4, inserted at the middle of the corolla-tube, scarcely exserted; filaments linear, sometimes with scattered stalked glands; anther-thecae diverging. *Ovary* thick-walled, 4-chambered, with a single ovule in each chamber; style included, linear, usually unequally 2-lobed at the apex. *Drupe* succulent, 2—4-locular; endocarp bony. *Seed* not seen.

Trees or shrubs, unarmed or spinous; leaves opposite, petioled, entire or toothed; inflorescence a panicle of cymes; bracts usually small.

Described species 36, extending over tropical Asia and the Indian Archipelago, rare in Africa; 1 species recorded from the northern Transvaal and Zululand. (Type: *G. asiatica* Linn.)

7191 15. CLERODENDRUM Linn., Sp. Pl., ed. 1, p. 637 (1753)

Flowers bisexual, regular or subirregular. *Calyx* shorter than the corolla-tube; tube campanulate or tubular, sparsely glandular, sometimes hairy; lobes 5, ovate-acuminate, oblong, or elliptic. *Corolla* 5-lobed, sometimes subbilabiate; tube long-cylindric or tubular and shorter than the lobes, sometimes slightly gibbous at the base, sometimes sparsely glandular without, sometimes with stalked glands, sometimes pilose within; lobes elliptic or oblong. *Stamens* 4; filaments linear, often long exserted, attached to the

upper part of the corolla-tube or in the corolla-tube, sometimes hairy at the base; anther-thecae scarcely diverging. *Ovary* imperfectly 4-chambered, with a single ovule in each chamber, sometimes hairy or glandular on the upper part; style linear, usually exserted, unequally 2-lobed at the apex. *Fruit* a drupe; endocarp bony. *Seed* straight; testa membranous; cotyledons flat, oblong; endosperm 0.

Trees or shrubs, sometimes dwarf from a large tap-root; rarely spiny; leaves opposite or whorled; inflorescence usually a lax cyme, pedunculate in the axils of the upper leaves or paniculate at the apices of the branches or crowded in a terminal corymb or head.

Described species about 430, found chiefly in the warm regions of the Old World; 151 species described from Africa; 15 species in South Africa recorded from the Transvaal, Bechuanaland, Natal, East Griqualand, Pondoland, to the Kentani and Bathurst districts, also found in South West Africa. (Type: *C. infortunatum* Linn.)

NOTE.—The ovary is strictly 1-chambered as the dissepiments are not attached to the ovary wall. The species described as *Kalaharia spinipes* Baill. and *K. spinescens* Gurke belong to the genus *Clerodendrum*.—E. P. P.

7192 16. HOLMSKIOLDIA Retz., Observ., vol. 6, p. 31 (1791)

Flowers bisexual, irregular. *Calyx* about as long as the corolla-tube, glandular and pubescent, membranous, coloured; tube obconic, campanulate, lobed or subtruncate; lobes oblong-elliptic. *Corolla* bilabiate; tube broadly tubular or cylindric, slightly curved, glandular; lobes oblong-elliptic, glandular. *Stamens* 4, inserted on the upper part of the corolla-tube; filaments long exserted, linear, hairy at the base; staminodes represented by a densely hairy ridge. *Ovary* imperfectly 4-chambered, with a single ovule in each chamber, densely hairy and glandular on the upper part; style long exserted, filamentous, 2-lobed at the apex. *Fruit* enclosed in the enlarged calyx, drupaceous or of 4 partly joined cocci, 4-locular, with a single seed in each loculus, hairy; pericarp hard. *Seed* straight; testa membranous.

Shrubs; leaves opposite; inflorescence an axillary or terminal cyme; bracts small, deciduous.

Species 3, found in India, Madagascar, and Africa; 1 species found in the northern Transvaal. (Type: *H. sanguinea* Retz.)

NOTE.—The ovary is strictly 1-chambered as the dissepiments are not attached to the ovary wall.—E. P. P.

7205 17. AVICENNIA Linn., Sp. Pl., ed. 1, p. 110 (1753)

Flowers bisexual, regular. *Calyx* 5-partite, as long as the corolla-tube; lobes broadly elliptic, ovate or oblong, sometimes densely glandular-hirsute, glandular-ciliate. *Corolla* somewhat fleshy, 4—5-lobed; tube slightly shorter than the lobes; tube funnel-shaped or campanulate, glandular; lobes ovate, glandular-pubescent without. *Stamens* 4, inserted in the throat of the corolla-tube, included; filaments shorter than the anthers; anthers ovate, with parallel thecae. *Ovary* imperfectly 4-chambered, with a single ovule in each chamber, densely hirsute; style shorter than the ovary, fleshy, conical, divided into 2 lobes. *Fruit* a compressed capsule, opening by 2 valves. *Seed* usually solitary by abortion, germinating before the fruit drops off; testa usually not developed; cotyledons folded longitudinally; radicle villous.

Shrubs or small trees; leaves opposite, undivided, petioled; inflorescence of contracted or densely capitate cymes; bracts and bracteoles present.

Described species 14, recorded from Africa, the Malay Peninsula, China, Australia, the Philippine Islands, and tropical America; 1 species in South Africa found in Natal, through Pondoland to the Kentani district. (Type: *A. officinalis* Linn.)

162. LABIATAE

Flowers irregular or more rarely regular or subregular, bisexual or rarely unisexual. *Calyx* tubular, campanulate, or funnel-shaped, regularly or irregularly 3—10- (usually 5-, rarely many-) toothed, or with 2 entire or toothed lips, very rarely truncate or 5-partite, sometimes with the posterior lobe broadly ovate and decurrent on the tube when calyx is 2-lipped, persistent and often enlarged in fertile flowers, very rarely deciduous above the base at the ripening of the fruit, rarely becoming succulent in the fruiting state. *Corolla* gamopetalus, 2- (rarely 1-) lipped, or oblique or subregular and 4—5-lobed, deciduous; lips, when corolla is bilabiate, equal or unequal, tube various, often hairy or glandular within. *Stamens* normally 4 (occasionally only 2) in 2 pairs of unequal lengths or subequal, all fertile or the upper pair sterile, inserted in the corolla-mouth or corolla-throat, or at varying depths in the corolla-tube; filaments sometimes connate, sometimes with a crest or projection near the base; anthers 1- or 2-theous. *Ovary* superior, seated on an entire or lobed disc, deeply or rarely shortly 4-lobed, 4-chambered, with a single erect ovule in each chamber; style often 2-lobed at the apex. *Fruit* of 4, or by abortion fewer, dry 1-seeded nutlets. *Seeds* erect; embryo straight or rarely curved; cotyledons fleshy; endosperm little or none.

Herbs or shrubs, sometimes with distinct tap-roots or tubers; stem and branches usually square; leaves opposite, whorled, or rarely alternate, entire, toothed, or lobed, usually gland-dotted, often odoriferous; stipules none; flowers solitary and opposite, or more usually 3 to many in a whorl and the pairs of whorls spaced out in terminal racemes or along the branches of a panicle or crowded into a head or corymb or seated in the axils of foliage leaves, bracteate or with bracteoles mingled with the flowers.

Genera about 170; species between 4,000 and 5,000, found in all warm and temperate regions; rare in arctic or alpine areas.

- | | | | | | |
|--|-----|-----|-----|---------------------------|---|
| 1. Flowers unisexual | ... | ... | ... | 20. Iboza N. E. Br. | |
| Flowers bisexual | ... | ... | ... | ... | 2 |
| 2. Fertile stamens 2 | ... | ... | ... | ... | 3 |
| Fertile stamens 4 | ... | ... | ... | ... | 5 |
| 3. Calyx becoming enlarged and fleshy in the fruiting stage | | | | 19. Hoslundia Vahl | |
| Calyx sometimes enlarged in fruit, but not becoming fleshy | ... | ... | ... | ... | 4 |
| 4. Connective of anthers separated into an upper arm bearing a perfect theca and a lower arm bearing a barren theca or without a theca | | | | 10. Salvia Linn. | |
| Connective of anther not as above | | | | 17. Plectranthus L'Hérit. | |
| 5. Corolla on a short stalk within the calyx-tube | | | | 7. Lasiocorys Benth. | |
| Corolla not on a short stalk but sessile within the calyx-tube | ... | ... | ... | ... | 6 |
| 6. Filaments bent; anthers and style held together by intermingling hairs | | | | 4. Acrotome Benth. | |
| Anthers and style not held together by intermingling hairs | ... | ... | ... | ... | 7 |
| 7. Lower lip of calyx with two subulate processes; upper pair of filaments with a hairy knee-bend | ... | ... | ... | 25. Becium Lindl. | |
| Calyx and filaments not as above; if filaments with a crest, the lower lip of calyx not with two processes | ... | ... | ... | ... | 8 |

8. Calyx lobes spinescent in fruit; filaments connate for the greater part of their length **16. Pycnostachys** Hook.
Filaments sometimes connate, but calyx-lobes not spinescent in fruit ... 9
9. Upper pair of filaments with a crest near the base
... .. **24. Ocimum** Linn.
Upper pair of filaments without a crest at the base 10
10. Corolla usually orange-yellow, rarely cream-coloured, usually well over 1 in. long **5. Leonotis** R. Br.
Corolla not as above 11
11. Anthers 2-theous 12
Anthers 1-theous 19
12. Calyx distinctly 2-lipped, with the two lips broad
... .. **3. Tinnea** Kotschy and Peyritsch
Calyx of 5 or more lobes, rarely sub-two-lipped but then the two lips not broad 13
13. Corolla 4—5-lobed, not very distinctly bilabiate 14
Corolla distinctly bilabiate or appearing 1-lipped 15
14. Filaments villous at the base **2. Teucrium** Linn.
Filaments glabrous **12. Mentha** Linn.
15. Corolla appearing 1-lipped **1. Ajuga** Linn.
Corolla distinctly 2-lipped 16
16. Upper corolla-lip much longer than the lower lip, fringed within
... .. **6. Leucas** R. Br.
Upper corolla-lip usually shorter than the lower lip; not fringed ... 17
17. Corolla-tube pilose within on the upper portion
... .. **8. Ballota** Linn.
Corolla-tube with or without an annular ring of hairs within, sometimes with papillae on the upper part of the tube 18
18. Stamens exserted from the corolla-tube **9. Stachys** Linn.
Stamens included in the corolla-tube **11. Micromeria** Benth.
19. Stamens included; filaments about as long as the anthers
... .. **15. Endostemon** N. E. Br.
Stamens exserted from the corolla-tube; filaments much longer than the anthers 20
20. Posterior calyx-lobe broadly ovate and more or less decurrent on the tube
Posterior calyx-lobe sometimes longer than the others but not decurrent on the tube... .. 21
... .. 23
21. Filaments of anterior pair of stamens contiguous at their insertion and usually connate for part of their length **23. Hemizygia** Briq.
Filaments free... .. 22
22. Upper corolla-lip emarginate; lower lip 3-partite
... .. **27. Thornecroftia** N. E. Br.
Upper corolla-lip 3—4-lobed; lower lip entire
... .. **26. Orthosiphon** Benth.
23. Corolla 5-lobed, scarcely bilabiate **13. Hyptis** Jacq.
Corolla distinctly bilabiate 24

24. Two lips of corolla about equal in length; stamens inserted on lower part of corolla-tube 22. *Geniosporum* Wall.
Upper lip of corolla shorter than the lower lip; stamens inserted in mouth of corolla-tube or lower down 25
25. All filaments connate or filaments of lower pair of stamens connate ... 26
Filaments all free 27
26. All filaments connate 18. *Coleus* Lour.
Filaments of lower stamens connate 21. *Syncolostemon* E. Mey.
27. Upper lip of corolla obscurely 4-toothed 14. *Aeolanthus* Mart.
Upper lip of corolla 3—4-lobed 28
28. Lower corolla-lip much longer than the upper
Corolla-lips more or less equal in length 17. *Plectranthus* L. Hérít.

7211

1. *AJUGA* Linn., Sp. Pl., ed. 1, p. 561 (1753)

Flowers bisexual, bilabiate. *Calyx* often shorter than the corolla-tube, 5-fid or 5-toothed, sometimes glandular and hirsute with multicellular hairs; tube campanulate, 10- to irregularly many-nerved; teeth or lobes subequal. *Corolla* 2-lipped, sometimes hairy and glandular; tube somewhat enlarged at the throat, with a ring of hairs within; upper-lip short or very short, subentire, emarginate or 2-fid, sometimes truncate; lower lip elongated, 3-lobed, with the middle lobe the largest and emarginate or 2-fid. *Stamens* 4, distinctly or subdidymous, with the lower pair usually the longer, usually exserted from the upper lip; filaments linear, sometimes with a few scattered hairs; anthers 2-theous, with the thecae divergent or divaricate, finally confluent. *Disc* equal or produced in front. *Ovary* shortly 4-lobed nearly to the middle; style terete, unequally 2-lobed above. *Nutlets* obovoid, reticulate-rugose, attached by a broad lateral areole which extends beyond the middle. *Seed* straight; testa membranous; tegmen somewhat fleshy; cotyledons flat, elliptic; radicle short, conical.

Annual or more usually perennial herbs, rarely suffructicose at the base, often decumbent or stoloniferous, sometimes with a well-developed tap-root; leaves often coarsely toothed, sometimes incised, rarely quite entire; floral leaves similar or the upper (sometimes all) reduced to bracts; inflorescence a dense or interrupted terminal spike or of 2- to many-flowered axillary whorls.

Described species about 100, found chiefly in the extra-tropical regions of the Old World, most numerous in the Orient; 1 species in South Africa, extending from the Transvaal, the eastern Orange Free State, and Natal to the Uitenhage and Somerset East districts. (Type: *A. pyramidalis* Linn.)

7212

2. *TEUCRIUM* Linn., Sp. Pl., ed. 1, p. 562 (1753)

Flowers bisexual, irregular. *Calyx* about as long as the corolla-tube, 5-lobed; tube tubular or campanulate, usually ribbed and pubescent; lobes equal or the uppermost the broadest, often lanceolate, acuminate. *Corolla* 5-lobed, appearing one- (the lower) lipped; tube globose or subglobose, ribbed, usually villous in the throat. *Stamens* 4, didymous or scarcely didymous, long-exserted; filaments thread-like, villous at the base; anthers 2-theous. *Disc* equal or scarcely evident. *Ovary* 4-lobed, glandular; style exserted, terete, 2-fid. *Nutlets* obovate in outline, often ribbed on the convex face and keeled on the inner face. *Seed* straight; testa somewhat fleshy; cotyledons flat, elliptic; radicle conical.

Herbs, undershrubs, or shrubs; leaves entire, toothed or more or less deeply lobed; the upper leaves similar or reduced to bracts; inflorescence a terminal spike, raceme, or head, or of 2- to several-flowered axillary whorls.

Described species about 300, widely distributed over the temperate and warmer regions of the world, but chiefly in the northern hemisphere and most frequent in the Mediterranean region; 3 species in South Africa recorded from the Transvaal, Swaziland, the Orange Free State, and Natal to the Swellendam district; also recorded from the Barkly West district and British Bechuanaland. (Type: *T. fruticans* Linn.)

7213 3. **TINNEA** Kotschy & Peyritsch, Pl. Tinn., p. 25, t. 11 (1867)

Flowers bisexual, irregular. *Calyx* 2-lipped, much enlarged, inflated, and deeply 2-valved when in fruit, sometimes ribbed, sometimes hirsute and glandular; tube campanulate; lips broad. *Corolla* 2-lipped; tube broad, enlarged at the throat, scarcely longer than the calyx; upper lip short, broad, erect-spreading, emarginate or 2-lobed, sometimes 3-lobed; lower lip much larger, spreading, 3-lobed or sometimes entire. *Stamens* 4, didymous or subdidymous; filaments sometimes broadly linear, widened and club-shaped above, densely villous at the base; anthers 2-theous, lateral on the filaments and the anthers on the shorter filaments the smaller. *Ovary* shortly 4-lobed, glabrous; style filamentous, 2-fid above. *Nutlets* obovoid-clavate, long contracted at the base, attached by a lateral areole, furnished on the back with a broad membranous elliptic or orbicular wing. *Seeds* attached laterally.

Shrubs or perennial herbs, pubescent or grey-tomentose; leaves sessile or petiolate, usually entire; the upper leaves similar to the lower or gradually reduced to bracts; inflorescence a terminal raceme, or with the flowers in loose 2-flowered axillary whorls.

An African genus of about 38 species; 4 species recorded from South Africa and found in the Transvaal and South West Africa. (Type: *T. aethiopica* Kotschy and Peyr.)

7236 4. **ACROTOME** Benth., in Endl. Gen. Pl., p. 627 (1838)

Flowers bisexual, bilabiate. *Calyx* as long as or shorter than the corolla-tube, 5—11-toothed, villous and sometimes also glandular; tube tubular, ribbed; teeth usually ovate-linear, acuminate. *Corolla* bilabiate, almost hyaline, usually villous on the upper portion; tube tubular, with a ring of hairs or glands within about the middle; upper lip straight, almost flat, without a conspicuous fringe of hairs; lower lip spreading, 3-lobed, with the middle lobe the largest. *Stamens* 4, inserted at same level at about the middle of the corolla-tube; filaments about as long as or longer than the anthers, villous; anthers obovoid and oblong; the stamens all held together by intertwining hairs. *Ovary* 4-lobed, truncate and glandular on the truncate surface; style entire and oblique at the apex. *Nutlets* obovate in outline, convex on the back, keeled and with two flat faces in front; pericarp ivory-like and mottled. *Seed* straight; testa somewhat fleshy; cotyledons oblong, slightly convex on the outer face; radicle distinct, conical.

Herbs or undershrubs; leaves entire or toothed; the floral leaves gradually reduced in size upwards; flowers in few- or densely many-flowered whorls in the axils of the upper leaves.

An African genus of 8 species; 6 species occur in South Africa, recorded from the Transvaal, British Bechuanaland, Basutoland, the Orange Free State, Natal, the north-western districts of the Cape Province, and South West Africa. (Type: *A. pallescens* Benth.)

NOTE.—A specimen Rogers 19589 (*A. hispida* Benth.) had a flower with a 6-lobed ovary.—E. P. P.

7264 **5. LEONOTIS** R. Br., in Ait. Hort. Kew., ed. 2, vol. 3, p. 409 (1811)

Flowers bisexual, bilabiate. *Calyx* about as long as the corolla-tube, 8—10-toothed, usually hirsute or densely pubescent; tube tubular, ribbed, sometimes truncate; teeth often rigid and spinescent, sometimes more or less unequal, sometimes the uppermost larger than the others, rarely all minute or obsolete. *Corolla* 2-lipped, usually hirsute and glandular; tube more or less funnel-shaped, sometimes with a ring of hairs low down within; upper lip erect, elongated, concave, densely villous, fringed within; lower lip short, spreading, 3-lobed, with the middle lobe scarcely longer than the other two. *Stamens* 4, didymous, ascending under the upper lip, with the lower pair longer than the upper; filaments broadly linear; anthers approximate in pairs, 2-theous, with the thecae divaricate. *Disc* surrounding the ovary, equal or laterally produced on one side. *Ovary* 4-lobed, truncate, glandular on the truncate surface; style terete, unequally 2-lobed. *Nutlets* ovoid-triquetrous, obtuse or truncate at the apex, glabrous.

Herbs or shrubs; leaves often ovate, sometimes oblong-lanceolate, toothed, usually petioled; floral leaves similar but smaller, often sessile; flowers in dense many-flowered axillary whorls with the whorls usually few or solitary near the ends of the stem and branches; bracteoles numerous, subulate to narrowly lanceolate, often spinescent.

Described species 33, all African except one which extends into tropical Asia and America; 12 species in South Africa, widely spread. (Type: *L. leonurus* R. Br.)

7268 **6. LEUCAS** R. Br., Prodr., p. 504 (1810)

Flowers bisexual, bilabiate. *Calyx* shorter or longer than the corolla-tube, sometimes 2-lipped, 6—10-toothed, ribbed, hirsute or densely villous; tube sometimes curved, sometimes oblique at the mouth; teeth equal or unequal, ovate-linear or ovate, acuminate, sometimes spinescent. *Corolla* bilabiate; tube tubular, widening above, hyaline, sparsely villous without, with a ring of hairs or papillae within, rarely without; upper lip erect, concave, entire, more rarely emarginate or 2-lobed, villous, fringed within, usually much longer than the lower lip; lower lip spreading, 3-lobed, with the middle lobe the longest. *Stamens* 4, didymous, with the lower pair longer than the upper, all, or at least the longer pair, exerted and ascending under the upper lip; filaments tubular; anthers approximate in pairs, 2-theous, with the thecae divaricate and finally confluent. *Disc* equal and entire or produced in front. *Ovary* 4-lobed, subtruncate or rounded above, sometimes glandular; style terete, exerted and ascending under the upper lip, unequally lobed. *Nutlets* ovoid-triquetrous, obtuse or scarcely truncate at the apex.

Annual or perennial herbs or sometimes undershrubs, variously hairy or rarely glabrescent; leaves entire or toothed; upper floral leaves similar to the others or reduced; flowers in axillary few- or many-flowered whorls.

Described species about 157, found in the tropical regions of the Old World; 1 species in tropical America and the West Indies; 8 species in South Africa recorded from the Transvaal, Swaziland, Natal to the East London district, also recorded from Bechuanaland Protectorate, the Kimberley district, and South West Africa. (Type: *L. zeylanica* (L.) R. Br.)

7268a **7. LASIOCORYS** Benth., Lab. Gen. et Sp., p. 600 (1834)

Flowers bisexual, bilabiate. *Calyx* shorter than the corolla-tube, 5—10-toothed, somewhat 2-lipped, ribbed, covered with glandular scales; tube tubular-campanulate; teeth ovate-acuminate to narrowly deltoid, sometimes one much smaller than the others or sometimes small teeth alternating with

larger teeth. *Corolla* bilabiate, seated on a short stalk within the calyx-tube, villous; tube tubular, with an undulating ring of papillae within; upper lip erect, concave, entire or emarginate, fringed within; lower lip spreading, 3-lobed, with the middle lobe the largest, sometimes with a partial palate. *Stamens* 4, didymous, affixed in the corolla-throat, ascending under the upper lip; lower pair the longer; filaments linear, scantily pilose; anthers 2-theous, with the thecae divaricate, finally confluent. *Disc* produced on the lower side. *Ovary* 4-lobed, subtruncate, glandular above; style linear, unequally 2-lobed above. *Nutlets* ovoid-triquetrous, rounded at the apex.

Branched shrubs or undershrubs, often dwarf from an underground rootstock; leaves entire or toothed; upper leaves similar to the others or reduced; flowers in axillary few- or many-flowered whorls; bracts subulate, very small.

Species 9, natives of Africa, Arabia and Socotra; 1 species in South Africa recorded from the Transvaal, Orange Free State, Natal, and southwards to the Port Elizabeth district, also recorded from the north-western districts and South West Africa. (Type: *L. capensis* Benth.)

NOTE.—I have examined a specimen of Marloth 1410, the type number of *Leucas altissima* Engl. and suggest that it is a species of *Lasiocorys*; also *Leucas capensis* (Benth.) Engl. should be *Lasiocorys capensis* as originally described by Bentham.—E. P. P.

7279

8. *BALLOTA* Linn., Sp. Pl., ed. 1, p. 582 (1753)

Flowers bisexual, irregular. *Calyx* longer than the corolla-tube, 5—15-toothed, villous, glandular; tube tubular, ribbed; teeth spreading, unequal, ovate, shortly acuminate. *Corolla* bilabiate; tube tubular, pilose within on the upper portion, without an annular ring of hairs; upper lip somewhat shorter than the lower lip, erect, flat, bilobed, sparsely villous, glandular, not fringed; lower lip 3-lobed, with the middle lobe the largest, emarginate or crenate. *Stamens* 4, didymous, inserted in the mouth of the corolla-tube, scarcely exerted, not lying on the face of the upper corolla-lip; filaments linear, bearded; anthers 2-theous, approximating in pairs. *Disc* undulating. *Ovary* 4-lobed, obtuse, often glandular above; style semi-terete, included, unequally 2-lobed. *Nutlets* ovoid-oblong, obtuse, smooth.

Perennial herbs or more rarely undershrubs, hirsute, woolly, or tomentose; leaves often rugose, toothed, the upper similar to the lower but smaller; flowers in axillary whorls; whorls many- or more rarely few-flowered; bracteoles subulate or oblong, sometimes spinescent or very small.

Species between 30 and 40, chiefly found in the Mediterranean region and the Orient, 1 species widely spread in Europe, 1 in Central Asia, 1 in Malaya, and 2 in tropical Africa; 1 species in South Africa, extending from the Burgersdorp district, through the coastal area to the Cape and into Namaqualand; also found in many of the central districts. (Type: *B. nigra* Linn.)

7281

9. *STACHYS* Linn. Sp. Pl., ed. 1, p. 580 (1753)

Flowers bisexual, bilabiate. *Calyx* 5-toothed, rarely more or less distinctly 2-lipped, shorter than or as long as the corolla-tube, 5- to more than 10-nerved, glabrous, glandular-hairy or densely villous; tube tubular-campanulate, campanulate, or sometimes funnel-shaped; teeth shorter than or as long as the tube, ovate-acuminate or lanceolate-acuminate. *Corolla* bilabiate; tube cylindric or narrowly funnel-shaped, sometimes curved, sometimes villous above, sometimes glandular-hairy without, annular pilose low down within, more rarely without a ring of hairs; upper lip erect or ascending, usually concave or arched, entire or very shortly emarginate, usually shorter than the lower lobe; lower lip spreading or deflexed, 3-lobed, with the middle lobe the largest. *Stamens* 4, didymous, ascending under the

upper lip, with the lower pair the longer, usually exerted from the corolla-tube; filaments linear, glabrous or sometimes glandular-villous, glandular-pubescent, or sparsely pubescent; anthers 2-theous, with the thecae usually divergent and at length divaricate. *Disc* usually equal. *Ovary* 4-lobed, glabrous or glandular on top; style terete, as long as the stamens, equally bifid above. *Nutlets* ovoid or oblong in outline, obtuse or rounded at the apex.

Annual or perennial herbs, undershrub, or sometimes shrubs, with various kinds of indumentum or sometimes nearly glabrous; leaves sessile or petioled, entire or toothed; the upper leaves often reduced to bracts; inflorescence a terminal spike or raceme or flowers in 2- to many-flowered axillary whorls, rarely reduced to 1 flower.

Described species about 478, most frequent in the temperate regions of both hemispheres; 59 species in South Africa, widely distributed. (Type: *S. sylvatica* Linn.)

7290 10. SALVIA Linn., Sp. Pl., ed. 1, p. 23 (1753)

Flowers bisexual, bilabiate. *Calyx* 2-lipped, almost as long as the corolla-tube, sometimes accrescent, usually ribbed, variously hairy and often with sessile glands; upper lip entire or 3-toothed or 3-lobed; lower lip bifid; more rarely both lips entire. *Corolla* bilabiate; tube ventricose or enlarged or subcampanulate above, naked or annular-pilose within; upper lip usually longer than the lower lip, erect or falcate, usually concave, entire or emarginate; lower lip spreading, 3-lobed. *Stamens* 2, curved; the connective produced and lying within the upper lip and bearing an oblong or linear anther-theca; the other part of the connective produced into a variously shaped appendage which may be naked or bear a much reduced anther-theca; staminodes either 2 or absent. *Disc* swollen. *Ovary* 4-lobed, situated on the swollen disc, glabrous; style terete, longer than the stamens, unequally 2-lobed above. *Nutlets* triquetrous or somewhat compressed, smooth.

Herbs, undershrubs, or shrubs; leaves entire, toothed or more or less deeply lobed; bracts small or large, rarely similar to the upper leaves; inflorescence a spike, raceme, or panicle; flowers in whorls of 2 to many.

Described species over 1,300, widely dispersed in the temperate and tropical regions of both hemispheres; 38 species in South Africa, widely distributed. (Type: *S. officinalis* Linn.)

7305 11. MICROMERIA Benth., in Bot. Reg. sub. t. 1282 (1829)

Flowers bisexual, bilabiate. *Calyx* shorter than the corolla-tube, 5-lobed or scarcely 2-lipped, ribbed, often pilose; tube tubular or tubular-campanulate; lobes often lanceolate-acuminate. *Corolla* 2-lipped, sometimes pubescent; tube tubular below, campanulate above, sometimes with papillae on the upper portion within; upper lip much smaller than the lower; erect, nearly flat, entire or emarginate; lower lip spreading, 3-lobed. *Stamens* 4, didymous, included, 2 inserted in the corolla-throat and 2 in the upper part of corolla-tube or all in the upper part of corolla-tube; anthers 2-theous, with the thecae distinct, parallel or divergent or divaricate. *Disc* equal or reduced to a gland. *Ovary* 4-lobed; style linear or terete, included, 2-lobed at the apex. *Nutlets* ovoid or oblong in outline, smooth.

Herbs or undershrubs; leaves usually small, entire or toothed; inflorescence a terminal spicate panicle or the whorls of flowers axillary.

Described species over 100, widely spread in both hemispheres; 2 species in South Africa extending from the Transvaal and Natal to Tembuland and the Queens-town district; also found in the eastern Orange Free State.

7328

12. *MENTHA* Linn., Sp. Pl., ed. 1, p. 576 (1753)

Flowers bisexual, subbilabiate. *Calyx* as long as the corolla-tube, 5-toothed, ribbed, pilose and with sessile glands; tube campanulate; lobes ovate, acuminate. *Corolla* subbilabiate, 4-lobed; tube funnel-shaped; lobes subequal or the upper rather broader and entire or emarginate. *Stamens* 4, attached at the middle of the corolla-tube, exserted; filaments linear; anthers 2-theous. *Disc* shallowly lobed. *Ovary* 4-lobed, glabrous; style linear, exserted, 2-lobed above. *Nutlets* ovoid, smooth.

Herbs; leaves opposite, usually toothed; inflorescence a spike-like raceme of whorled flowers or flower-whorls dispersed and axillary; floral leaves reduced to small bracts; bracteoles usually small or obsolete.

Over 200 species described, with many subspecies and hybrids, prevalent in the temperate regions; 3 species in South Africa, fairly generally distributed. (Type: *M. spicata* Linn.)

7342

13. *HYPTIS* Jacq., Collect., vol. 1, p. 101 (1786)

Flowers bisexual, subbilabiate. *Calyx* as long as the corolla-tube, 5-lobed, more or less accrescent in fruit; tube ovoid-campanulate or tubular, ribbed; lobes slightly shorter than the tube, linear. *Corolla* 5-lobed, subbilabiate; tube cylindric, somewhat ventricose below; upper lobes flat, erect or spreading; lateral lobes usually similar; lower lobe (lip) saccate, abruptly deflexed, entire or emarginate. *Stamens* 4, didymous, inserted in the corolla-throat; filaments linear; anthers 1-theous. *Disc* entire or swollen in front into a short gland. *Ovary* 4-lobed; each lobe terete, glabrous; style shortly 2-fid or entire at the apex. *Nutlets* ovoid or oblong in outline, smooth or punctate-rugose, in a few species surrounded by a membranous wing.

Annual or perennial herbs; inflorescence various.

Described species about 400, all American; 1 species in South Africa, recorded from the Transvaal and Natal. (Type: *H. capitata* Jacq.)

7345

14. *AEOLANTHUS* Mart., Amoen. bot. monae., p. 4, t. 2 (1825)

Flowers bisexual, bilabiate. *Calyx* shorter than the corolla-tube, truncate or obscurely 2-lipped, finally circumscissile near the base, usually accrescent in fruit, variously hairy; tube ovoid, campanulate, or tubular. *Corolla* 2-lipped; tube tubular, gradually widening upwards, straight or recurved; upper lip obscurely 4-toothed; lower lip larger than the upper, concave, entire. *Stamens* 4, didymous, inserted in the corolla-mouth, exserted; filaments linear; anthers 1-theous. *Disc* produced in front. *Ovary* 4-lobed, glabrous; style about as long as the stamens, shortly bifid above. *Nutlets* somewhat orbicular or oblong in outline, compressed, smooth.

Annual or perennial herbs or small shrubs; leaves usually fleshy; inflorescence a lax panicle of cymes; bracts small, caducous.

An African genus of about 80 species; 1 species described from Australia; 3 species in South Africa, recorded from the Transvaal, Pondoland and the Graaff-Reinet district. (Type: *A. suavis* Mart.)

7345a

15. *ENDOSTEMON* N. E. Br., in Dyer, Fl. Cap., vol. 5, p. 295 (1910)

(*Pseudocimum* Bremk.)

Flowers bisexual, irregular. *Calyx* shorter than the corolla-tube, 2-lipped, unequally 5-toothed, slightly accrescent in fruit; tube campanulate, naked or villous in the throat; posterior lobe broadly ovate to orbicular with the margin slightly decurrent; lateral and anterior teeth narrowly triangular

to subulate, with the anterior pair the longer. *Corolla* subequally 4-lobed; tube cylindric or rarely somewhat widened at the throat, straight or nearly so, usually pilose within; lobes flat or nearly so, with the posterior and anterior lobes sometimes slightly larger than the lateral lobes. *Stamens* 4, included within the corolla-tube; filaments about as long as the anthers, usually pilose; anthers 1-theous, reniform. *Disc* scarcely enlarged anteriorly. *Ovary* 4-lobed, glabrous or somewhat pubescent at the apex; style included, sometimes hooked and simple above or obtusely 2-lobulate. *Nutlets* oblong in outline to suborbicular, sometimes with mucilaginous wool on wetting. *Seed* straight; embryo straight; cotyledons flat, elliptic; radicle short, conical.

Herbs, sometimes with tuberous or strong tap-roots; stems 4-angled or sometimes terete; leaves opposite and decussate, sessile or petioled, with the lamina usually serrate on the margins, sometimes gland-dotted; inflorescence usually of 2- to 6- (sometimes 12-) flowered whorls in terminal or axillary racemes; bracts usually persistent, small or sometimes large and leaf-like.

Species 17, found in Africa, Arabia, and India; 3 species in South Africa, recorded from the Transvaal, Bechuanaland Protectorate, and Natal. (Type: *E. obtusifolius* (Meyer) N. E. Br.)

7347 16. PYCNOSTACHYS Hook., Exot. Fl., vol. 3, t. 202 (1825)

Flowers bisexual, bilabiate. *Calyx* much shorter than the corolla-tube, 5-partite; tube shallowly campanulate; lobes linear, much longer than the tube, becoming spinescent in fruit. *Corolla* bilabiate; tube cylindric in the lower half, campanulate above; upper lip deeply concave and curved; lower lip shorter than the upper, often 3-lobed. *Stamens* 4, lying within the concavity of the upper lip; filaments joined and adnate to the corolla, free above; anthers 1-theous. *Disc* produced in front. *Ovary* 4-lobed, glabrous; style sometimes thread-like, lying with the stamens in the concavity of the upper lip, shortly 2-lobed at the apex. *Nutlets* black or brown, elliptic in outline, convex on one face, bluntly keeled on other face. *Seed* straight; cotyledons flat, cordate; radicle evident, conical.

Perennial erect herbs; leaves opposite or whorled; inflorescence a dense terminal spike; bracts shorter or longer than the calyx.

Species 37, all African with the exception of one species recorded from Madagascar; 2 species in South Africa, found in the Transvaal, Swaziland, the Orange Free State, and East Griqualand. (Type: *P. coerulea* Hook.)

7350 17. PLECTRANTHUS L'Hérit., Stirp. Nov., p. 84, verso t. 41, 42 (1785)

Flowers bisexual, bilabiate. *Calyx* much shorter than the corolla-tube, unequally 5-lobed or usually 2-lipped, variously hairy and usually with sessile glands; tube usually shallow; lobes longer than the tube, often lanceolate and acuminate, sometimes with the lower lobe ovate. *Corolla* bilabiate, usually variously hairy and with sessile glands; tube usually bent, broadly tubular or cylindric, sometimes ventricose, sometimes narrowly campanulate above, often gibbous below; upper lip 3—4-lobed or emarginate, shorter than the lower lip; lower lip entire, boat-shaped. *Stamens* 4, very rarely 2, exserted or included, attached to the mouth of the corolla-tube and lying in the concavity of the lower lip; filaments linear or terete; anthers 1-theous. *Disc* usually produced in front. *Ovary* 4-lobed, glabrous, sometimes with sessile glands; style lying with the stamens in the concavity of the lower lip, 2-lobed above. *Nutlets* ovoid or oblong in outline, smooth, granulate, or punctate.

Annual or perennial herbs or undershrubs; inflorescence a lax panicle or a racemose cyme, sometimes congested; bracts usually small, leaf-like.

Described species about 360, natives of Africa, India, China, Japan, the Malay Archipelago, Australia, and Polynesia; 47 species in South Africa, extending from the Transvaal and Natal, through the coastal districts to Knysna, rare in the south-western districts. (Type: *P. fruticosus* L'Hérit.)

NOTE.—In *P. zuluensis* T. Cooke only 2 stamens are present.—E. P. P.

7355 18. *COLEUS* Lour., Fl. Cochinch., vol. 2, p. 372 (1790)

Flowers bisexual, bilabiate. *Calyx* about as long as or shorter than the corolla-tube, 5-lobed, 2-lipped, pubescent; tube shallowly campanulate, sometimes villous in the throat; lobes unequal, with the upper lobe ovate and broader than the others. *Corolla* bilabiate; tube broadly tubular; upper lip 3–4-lobed; lower lip much longer than the upper, erect, concave. *Stamens* 4, attached to the throat of the corolla-tube and lying in the concavity of the lower lip; filaments sometimes connate and adnate to the corolla for the greater part of their length, free above; anthers 1-theous. *Disc* produced in front. *Ovary* 4-lobed, glabrous; style as long as the stamens and lying within the staminal-tube when filaments connate, shortly 2-lobed above. *Nutlets* ovoid or subglobose, smooth. *Embryo* straight; testa membranous; cotyledons thick; radicle small, conical.

Annual or perennial herbs or undershrubs, sometimes with underground tubers; leaves sessile or petioled; inflorescence a spike, raceme, or panicle.

Described species about 240, natives of Africa, the Mascarene Islands, India, China, the Malay Archipelago, Australia, and Polynesia; 4 species in South Africa found in the Transvaal, Natal, and the Peddi and East London districts; also recorded from South West Africa. (Type: *C. amboinicus* Lour. = *C. aromaticus* Benth.)

7357 19. *HOSLUNDIA* Vahl, Enum., vol. 1, p. 212 (1805)

Flowers bisexual, bilabiate. *Calyx* shorter than the corolla-tube, 5-toothed, becoming much enlarged and fleshy in fruit, pubescent and with sessile glands; tube tubular; teeth subequal, much shorter than the tube. *Corolla* bilabiate; tube tubular, gradually widening upwards; upper lip 3-lobed, subequalling the lower lip, ciliate; lower lip entire. *Stamens* 2, fertile, attached to the upper part of the corolla-tube, slightly exserted; filaments linear; anthers 1-theous; staminodes 2. *Disc* produced in front. *Ovary* 4-lobed, glabrous; style semi-terete, as long as the stamens, shortly 2-lobed. *Nuts* ellipsoid, enclosed in the fleshy calyx to form a berry-like fruit; testa membranous; cotyledons elliptic, thickish; radicle small.

Herbs or small shrubs; leaves opposite or whorled; inflorescence a terminal panicle, with the primary branches simple or branched.

An African genus of 2–3 species; 1 species in South Africa recorded from the Transvaal. (Type: *H. opposita* Vahl)

7357a 20. *IBOZA* N. E. Br., Fl. Cap., vol. 5, sect. 1, p. 298 (1910)

Plants dioecious. *Flowers* small. *Male flowers*.—*Calyx* shorter than the corolla-tube; tube more or less campanulate; uppermost lobe often ovate to suborbicular. *Corolla* sometimes covered with sessile glands; tube campanulate or tubular-campanulate; lobes usually 5, rarely 4, unequal or subequal. *Stamens* 4, inserted in the throat of the corolla-tube, exserted; filaments linear; anthers 1-theous. *Ovary* and style abortive. *Female flowers*.—*Calyx* and *corolla* as in the male but usually slightly smaller. *Stamens* 0 or 4 and abortive. *Disc* produced in front. *Ovary* 4-lobed,

glabrous; style linear, exserted, 2-lobed at the apex. *Nutlets* erect, oblong in outline or ovoid and dorsally compressed, obtuse or acute.

Stout perennial herbs, sometimes (at least as to dried specimens) nearly leafless at the time of flowering; leaves opposite, petiolate, ovate or cordate, toothed; inflorescence a large terminal much-branched panicle, with the ultimate branches laxly or densely spike-like and the separate whorls 6-flowered.

Species more than 12, found in Africa and India (?); 5 species in South Africa found in the Transvaal, the eastern Orange Free State, and Natal. (Type: *I. riparia* (Hochst.) N. E. Br.)

7359 21. SYNCOLOSTEMON E. Mey., Comm. Pl. Afr. Austr., p. 230 (1837)

Flowers bisexual, bilabiate. *Calyx* usually much shorter than the corolla-tube, rarely almost as long, 5-lobed, sub-2-lipped, 10-ribbed, hirsute, setose, more rarely densely villous, sometimes with glandular hairs, sometimes with sessile glands; tube tubular, sometimes villous in the throat; lobes usually ovate and acuminate, with the uppermost lobe sometimes broader than the others. *Corolla* bilabiate; tube tubular and widening above or tubular below and campanulate above, sometimes glandular without and within; upper lip erect or horizontal, 3-lobed; lower lip usually erect, deeply concave, entire. *Stamens* 4, didymous, exserted; upper pair affixed to the middle, or lower down, of the corolla-tube, with free filaments which are sometimes hairy; lower pair with the filaments connate and adnate to the corolla-tube; anthers 1-theous. *Disc* lobed, produced in front. *Ovary* 4-lobed, glabrous, style linear, exserted or included, 2-lobed above. *Nutlets* oblong in outline, semi-terete; pericarp subcoriaceous. *Seed* straight; testa membranous; cotyledons thickish; radicle small.

Herbs, very rarely woody; leaves opposite, simple, gland-dotted; inflorescence terminal, paniculate, lax or crowded into a dense mass; flowers in pairs or in 6-flowered whorls.

Endemic; species 8, extending from the Transvaal, Natal, and the Transkei to the East London district. (Type: *S. densiflorus* E. Mey.)

7363 22. GENIOSPORUM Wall. ex Benth., in Bot. Reg. sub t. 1300 (1830)

Flowers bisexual, bilabiate. *Calyx* shorter than the corolla-tube, 4—5-toothed, pilose or pubescent, sometimes with sessile glands; tube campanulate; 3 upper teeth subequal and smaller than the emarginate or minutely bifid lowest tooth when calyx is 4-toothed, when 5-toothed then the 3 upper teeth longer than the other 2, sometimes all the teeth subequal. *Corolla* bilabiate, sometimes pilose and with sessile glands; tube subcampanulate, sometimes glandular or hairy within; upper lip 4-lobed; lower-lip boat-shaped and scarcely longer than the lobes of the upper lip. *Stamens* 4, didymous, attached to the lower part of the corolla-tube, exserted; filaments linear, sometimes glandular-hairy; anthers 1-theous. *Disc* cup-shaped, slightly produced in front. *Ovary* 4-lobed, glabrous; style linear, exserted or included, 2-lobed above. *Nutlets* ellipsoid or oblong in outline.

Perennial herbs; leaves opposite; inflorescence terminal, spike-like, with the whorls many-flowered, usually crowded.

Species 25, mostly African but also recorded from Madagascar and Indo-China; 1 species in South Africa found in the Transvaal and Swaziland. (Type: *G. strobiliferum* Wall.)

7365 **23. HEMIZYGIA** Briq., in Engl. and Prantl, Nat. Pflanzenfam. 4, 3a, p. 368 (1897)

(*Orthosiphon* Benth. of Fl. Cap. partly)

Flowers bisexual, bilabiate. *Calyx* shorter than the corolla-tube, unequally 5-lobed, semi-erect when flowering, more or less declinate and accrescent in fruit; tube tubular-campanulate; posterior lobe broadly ovate, with the margin slightly decurrent; lateral and anterior teeth narrowly triangular to subulate with the anterior pair the longer. *Corolla* bilabiate; tube tubular-campanulate, dilated above and compressed laterally at the throat, truncate at the mouth; posterior lip small, 3-lobed, with the median lobe more or less emarginate; anterior lip entire, deeply concave or boat-shaped, usually deflexed at maturity. *Stamens* 4, exserted (in *H. pretoriae* the posterior pair are included); posterior pair inserted usually near the base of the corolla-tube (rarely in the throat), with the filaments free and sometimes pilose; anterior pair inserted in the mouth of the corolla-tube, with the filaments contiguous at their insertion and, with few exceptions, connate for part of their length; anthers reniform, 1-theous. *Disc* usually saucer-shaped, crenate, slightly produced in front. *Ovary* 4-lobed, glabrous; style exserted, capitate and emarginate at the apex or shortly 2-lobed. *Nutlets* oblong in outline or suborbicular.

Branching herbs or sometimes small shrubs, usually erect, sometimes stellately tomentose; leaves opposite and decussate, rarely ternately arranged, sessile or sometimes petiolate; inflorescence of verticillasters (usually 2- to 6-flowered) in terminal or axillary racemes; bracts small, deciduous, sometimes the terminal few pairs enlarged, coloured, and usually sterile.

A genus of 28 species of which number 26 occur in Africa; 21 species in South Africa recorded from the Transvaal, Swaziland, Zululand, Natal, East Griqualand, to Tembuland; also recorded from the Queenstown district, Bechuanaland, and South West Africa. (Type: *H. teucrifolia* (Hochst.) Briq.)

7366 **24. OCIMUM** Linn., Sp. Pl., ed. 1, p. 597 (1753)

Calyx about as long as the corolla-tube, 5-lobed, 2-lipped, often villous; tube campanulate, sometimes villous within; upper lobe much larger than the rest, usually ovate, decurrent on the tube; 4 lower lobes or teeth usually unequal. *Corolla* bilabiate; tube campanulate, usually slightly globose at the base; upper lip 4-lobed, with the lobes more or less equal, sometimes pilose; lower lip erect, concave, sometimes pilose. *Stamens* 4, didymous, exserted; upper pair affixed near the base of the corolla-tube, linear, with a crest or tuft of hairs or other appendage near the base of the filament; lower pair affixed in the corolla-mouth; anthers 1-theous. *Disc* almost as long as the ovary. *Ovary* 4-lobed, glabrous; style terete, exserted, 2-lobed. *Nutlets* globose; pericarp subcoriaceous, mucilaginous when wetted. *Embryo* straight; cotyledons flat; radicle small.

Herbs or small shrubs; leaves opposite, simple, gland-dotted; inflorescence terminal, spike-like; flowers in whorls of 6.

Described species about 160, but probably not all correctly placed in the genus *Ocimum*, mostly African, but widely distributed in the warmer regions; 6 species in South Africa found in the Transvaal, Natal, Griqualand West, Bechuanaland, and South West Africa; also recorded from the Komgha district. (Type: *O. basilicum* Linn.)

7366a **25. BECIUM** Lindl., Bot. Reg. Misc., p. 42 (1842)

Flowers bisexual, bilabiate. *Calyx* shorter than the corolla-tube, 2-lipped, 3- (rarely 5-) lobed, usually villous, sometimes setose; tube campanulate;

upper lip ovate, decurrent on the tube; lower lip with two subulate horns; lateral teeth none or rarely developed. *Corolla* bilabiate; tube tubular below, then much widened above, sometimes obliquely gibbous; upper lip 4-lobed; lower lip concave or boat-shaped. *Stamens* 4, didymous, exserted; upper pair affixed near the base of the corolla-tube; filaments free, with a hairy knee-bend near the base; lower pair affixed at the base of the lower corolla-lip; filaments free; anthers all 1-theous. *Disc* cup-shaped, almost as long as the ovary. *Ovary* 4-lobed, glabrous; style exserted, filamentous, 2-lobed above. *Nutlets* ellipsoid or oblong in outline, slightly dorsally compressed, glabrous.

Herbs or small shrubs, often with a deep tap-root; leaves opposite or fascicled, simple, gland-dotted; inflorescence terminal, spike-like, with distant or crowded flower-whorls.

Described species 11; 2 found in India, none in Arabia, the rest African; 4 species in South Africa; extending from the Transvaal and Natal to the Uitenhage district; also recorded from a few of the central districts, the eastern portion of the Orange Free State and South West Africa. (Type: *B. bicolor* Lindl.)

7367 26. *ORTHOSIPHON* Benth., Bot. Reg., sub. t. 1300 (1830)

(*Nautochilus* Bremk.)

Flowers bisexual, bilabiate. *Calyx* shorter than the corolla-tube, 5-lobed, 2-lipped; tube cylindric to campanulate, glabrous to sparsely pubescent within; upper lip broadly ovate to suborbicular, with the margin more or less decurrent on the tube; lower lip with the lobes usually ovate, acuminate and the 2 anterior lobes usually exceeding the lateral pair. *Corolla* bilabiate; tube cylindric or tubular and slightly widening above, glabrous or with two pilose areas within near the base; upper lip shortly 3—4-lobed, more or less erect; lower lip usually erect, concave or boat-shaped, entire. *Stamens* 4, didymous, exserted beyond the corolla-tube; upper pair inserted in the upper half of the corolla-tube, rarely near the base; lower pair inserted near the mouth of the corolla-tube; filaments usually glabrous or with those of the upper pair pilose near the base; anthers reniform, 1-theous. *Disc* cup-shaped, usually enlarged in front. *Ovary* 4-lobed, glabrous; style rarely exserted beyond the anterior corolla-lip, filamentous or terete, obtuse or more or less capitate or 2-lobed at the apex. *Nutlets* oblong in outline to suborbicular.

Herbs or undershrubs, usually erect and branching, sometimes with tuberous roots; leaves opposite and decussate or rarely ternately arranged, rarely in a basal rosette, sessile or petiolate, serrate or crenate, often gland-dotted; inflorescence of verticillasters of usually 2 to 6 flowers, sometimes many-flowered; bracts usually more or less persistent, small or rarely large and conspicuous.

Many species described and recorded from China, India, Malaya, Arabia, Socotra, but several referred to other genera; about 33 species found in Africa; 6 species found in South Africa and recorded from the Transvaal, Swaziland, and Natal.

7367a 27. *THORNCROFTIA* N.E. Br., Kew Bull., p. 281 (1912)

Flowers bisexual, bilabiate. *Calyx* shorter than the corolla-tube, 5-lobed, 2-lipped; upper lip ovate, acute, decurrent on the tube; lower lip subequally 4-toothed, with the teeth narrowly deltoid and acute. *Corolla* bilabiate; tube long-cylindric; upper lip cuneate-oblong, emarginate; lower lip 3-partite from the base, with the lateral segments linear-lanceolate, subacute, and the middle segment concave and obtuse. *Stamens* 4, didymous, declinate, inserted in the throat of the corolla-tube, free, exserted; anthers 1-theous.

Disc small, swollen into a gland in front. *Ovary* 4-lobed; style bifid at the apex. *Nutlets* subellipsoid, slightly corrugated at the apex.

Herb; leaves opposite, petiolate; inflorescence a panicle; flowers opposite, pedicelled.

Endemic; species 1, recorded from the Barberton district. (Type: *T. longiflora* N. E. Br.)

163. SOLANACEAE

Flowers bisexual, regular or slightly irregular. *Calyx* 4—5- (rarely 6—7-) toothed or lobed, sometimes inflated in fruit, often much shorter than the corolla-tube; lobes imbricate or valvate. *Corolla* 4—5- (rarely 6—7-) lobed; tube funnel-shaped, tubular, campanulate, or rotate; lobes induplicate-valvate in bud, spreading or more rarely erect, equal or subequal. *Stamens* as many as the corolla-lobes and alternating with them, rarely fewer, inserted on the corolla-tube; filaments short or long; anthers 2-theous, distinct or conniving into a cone, with the thecae parallel or diverging, dehiscent by terminal pores or longitudinal slits. *Disc* annular, cup-shaped, entire, lobed, or absent. *Ovary* superior, sessile or shortly stipitate, 2—5-chambered, with numerous (rarely 4) anatropous or amphitropous ovules in each chamber; style terminal, filiform or stout; stigma capitate, cyathiform, globose, often shallowly 2-lobed. *Fruit* a berry or a capsule dehiscent by valves or circumscissile. *Seeds* usually many, rarely solitary by abortion; testa often somewhat leathery; embryo usually curved; cotyledons terete or flat and linear, rarely wider than the radicle; radicle terete; endosperm usually somewhat horny.

Herbs, erect or climbing shrubs, more rarely trees, glabrous, pubescent, or stellately tomentose, sometimes spiny; leaves alternate, geminate or rarely verticillate, entire or variously divided; inflorescence cymose, terminal, leaf-opposed or extra-axillary, sometimes appearing umbellate or fasciculate, or reduced to one flower.

Genera about 66; species between 2,000 and 3,000, very abundant in tropical and extra-tropical South America.

- | | | | |
|--|--------|----------------------------|---|
| 1. Leaves verticillate; ovules 4 | ... | 8. <i>Retzia</i> Thunb. | |
| Leaves alternate or geminate | ... .. |  | 2 |
| 2. Calyx becoming large and bladdery in fruit | ... .. |  | 3 |
| Calyx not as above | ... .. |  | 4 |
| 3. Flowers fascicled | ... .. | 2. <i>Withania</i> Pauquey | |
| Flowers solitary | ... .. | 3. <i>Physalis</i> Linn. | |
| 4. Fruit a capsule | ... .. |  | 5 |
| Fruit a berry | ... .. |  | 6 |
| 5. Capsule armed with spines | ... .. | 5. <i>Datura</i> Linn. | |
| Capsule without spines | ... .. | 7. <i>Nicotiana</i> Linn. | |
| 6. Stamens inserted in the corolla-mouth or throat; anthers dehiscent by pores | ... .. | 4. <i>Solanum</i> Linn. | |
| Stamens inserted near base of corolla-tube; anthers not dehiscent by pores | ... .. |  | 7 |
| 7. An armed shrub or small tree; ovary on a short stout foot within the disc | | 6. <i>Cestrum</i> Linn. | |
| Spiny shrubs; ovary not on a short stout foot | | 1. <i>Lycium</i> Linn. | |

7379

1. *LYCIUM* Linn., Sp. Pl., ed. 1, p. 191 (1753)

Flowers regular. *Calyx* many times shorter than the corolla-tube or about as long as the corolla-tube, equally or unequally 3—5-lobed, sometimes glandular-hairy; tube campanulate, sometimes truncate; lobes slightly longer or shorter than the tube, usually ovate or lanceolate. *Corolla* 4—5-lobed; tube campanulate, funnel-shaped, tubular or urceolate, often gradually widening upwards; lobes many times shorter than the tube or about as long, elliptic or ovate-oblong, obtuse. *Stamens* 4—5, alternating with the corolla-lobes, inserted at various depths in the corolla-tube, included or exserted; filaments linear, often dilated and hairy at the base; anthers 2-theous. *Disc* annular or cupular. *Ovary* 2-chambered, with few to many ovules; style simple, terete, included or slightly exserted; stigma capitate, cyathiform or shortly 2-lobed. *Fruit* a globose ovoid or conical berry. *Seeds* suborbicular in outline, compressed; testa somewhat leathery, reticulated; embryo curved; cotyledons linear; radicle terete; endosperm horny.

Trees or shrubs; ultimate branches often spiny; leaves entire, linear, sometimes subterete, often in fascicles; flowers solitary.

Described species about 230, found in the temperate and warm regions throughout the world, very common in extra-tropical South America; 52 species described from South Africa, widely distributed; appears to be absent or rare in the Transvaal. (Type: *L. afrum* Linn.)

7400

2. *WITHANIA* Pauquy, Diss. de Belladonna, p. 14 (1824)

Calyx almost as long as the corolla-tube, 5—6-lobed, densely stellately hairy, enlarged and inflated in the fruit; tube campanulate; lobes ovate, acuminate. *Corolla* 3—6-lobed, stellately hairy; tube campanulate, hairy within; lobes ovate, valvate. *Stamens* 5, alternating with the corolla-lobes, inserted near the base of the corolla-tube, scarcely exserted; filaments linear; anthers 2-theous. *Disc* annular, crenate, or 0. *Ovary* 2-chambered, with many ovules; style terete, included; stigma globose. *Fruit* a globose berry enclosed in the enlarged calyx. *Seeds* suborbicular in outline, compressed; testa somewhat leathery, reticulated; embryo curved; cotyledons linear; radicle long; endosperm scanty.

Hoary shrubs, loosely tomentose, woolly or glabrescent; leaves entire; flowers usually fascicled, subsessile or shortly pedicellate.

Described species 22, found in North Africa, Somaliland, the Mediterranean region, Spain, the Canary Islands, and South America; 1 species in South Africa, widely distributed. (Type: *W. frutescens* Pauquy)

7401

3. *PHYSALIS* Linn., Sp. Pl., ed. 1, p. 182 (1753)

Calyx as long as the corolla-tube, 5-lobed, densely villous, stellately hairy, or glabrous, enlarged and inflated and membranous in fruit, 5-angled or prominently 10-ribbed, often 5-auricled at the base; tube campanulate; lobes as long as or shorter than the tube, often ovate and acuminate. *Corolla* subrotate or very widely campanulate, 5-angled or shortly and widely 5-lobed; tube sometimes hairy within. *Stamens* 5, inserted near the base of the corolla-tube, usually included; filaments linear; anthers 2-theous, longer or shorter than the filaments. *Disc* 0. *Ovary* 2-chambered, with many ovules in each chamber; style stout, terete, included; stigma capitate or 2-lobed. *Fruit* a globose berry, enclosed within the inflated calyx. *Seeds* orbicular in outline, more or less biconvex; testa somewhat leathery, smooth or tuberculate-rugose; embryo curved; cotyledons linear; radicle terete; endosperm horny.

Annual or perennial herbs, clothed with simple or stellate hairs; leaves entire, sinuate or more rarely pinnatifid; flowers small, solitary, axillary, pedicellate, violet, yellow, or white, often purple at the base.

Described species about 140, found chiefly in the warmer parts of America; about 5 species naturalized in South Africa and widely spread. (Type: *P. alkekengi* Linn.)

7407

4. SOLANUM Linn., Sp. Pl., ed. 1, p. 184 (1753)

Calyx longer than the corolla-tube, 5—10- (rarely 4-) toothed or lobed, glabrous or densely tomentose or spiny; tube campanulate or rotate; lobes longer or shorter than the tube. *Corolla* often rotate, 5- (rarely 4- or 6-) lobed; tube sometimes campanulate; lobes longer than the tube, sometimes tomentose. *Stamens* usually 5, rarely 6, inserted in the corolla-mouth or corolla-throat or at base of corolla-tube, about as long as the corolla-lobes, usually on filaments, more rarely sessile; filaments linear or oblong, shorter than the anthers; anthers large, oblong or lanceolate, dehiscing by pores or longitudinal slits. *Disc* inconspicuous. *Ovary* usually 2- (rarely 3—4-) chambered, with numerous ovules in each chamber, usually glabrous; style terete, sometimes hairy on the lower half; stigma capitate or minutely 2-lobed. *Fruit* a globose berry varying in size from that of a pea to that of a large plum. *Seed* orbicular in outline, biconvex; testa somewhat leathery, reticulated; embryo curved; cotyledons linear; radicle terete; endosperm somewhat horny.

Shrubs, herbs, or small trees, sometimes climbing, unarmed or spiny; leaves alternate or geminate, entire, lobed, or pinnatisect; inflorescence an extra-axillary dichotomous racemose or umbellate cyme, sometimes a terminal panicle; flowers yellow, white, violet, or purple.

Described species over 2,000, most abundant in the tropics; between 30 and 40 species in South Africa widely distributed. (Type: *S. nigrum* Linn.)

7415

5. DATURA Linn., Sp. Pl., ed. 1, p. 179 (1753)

Calyx shorter than the corolla-tube, 5-lobed or spathaceous, sometimes circumscissile near the base; tube tubular; lobes much shorter than the tube. *Corolla* usually large; tube long-cylindric or funnel-shaped and enlarged at the throat; limb plicate; lobes 5, very much shorter than the tube, usually acuminate. *Stamens* 5, inserted near the base of the corolla-tube, included; filaments linear; anthers sometimes cohering into a tube. *Ovary* 2-chambered or more or less spuriously 4-chambered, with numerous ovules; style included; stigma dilated and 2-lobed, sometimes horseshoe-shaped. *Fruit* a dry capsule or with a somewhat fleshy pericarp, indehiscent or 4-valved, spiny or smooth. *Seeds* black, oblong in outline; testa somewhat leathery; embryo curved; cotyledons linear; radicle terete; endosperm horny.

Herbs, shrubs, or trees, glabrous or sparingly hairy; leaves large, entire or coarsely toothed; flowers pedicelled, solitary, large, erect or pendulous.

Described species about 42, widely dispersed through the temperate and warmer regions of both hemispheres; 3 species naturalized in South Africa. (Type: *D. stramonium* Linn.)

7420

6. CESTRUM Linn., Sp. Pl., ed. 1, p. 191 (1753)

Calyx shorter than the corolla-tube; 5-lobed; tube campanulate or tubular; lobes shorter than the tube, valvate. *Corolla-tube* cylindric below, widening above; lobes 5, much shorter than the tube, induplicate-valvate. *Stamens* 5, inserted low down in the corolla-tube, included; filaments linear or filiform,

sometimes pilose, sometimes with a small tooth near the base. *Disc* inconspicuous or rather thick or membranous and cup-shaped and surrounding the ovary. *Ovary* on a short stout foot within the disc, 2-chambered, with few ovules in each chamber; style linear or filiform, included; stigma capitate. *Fruit* a berry, slightly fleshy, indehiscent, globose, ovoid or oblong in outline. *Seeds* few or by abortion solitary, oblong in outline, nearly smooth; embryo straight or slightly curved; cotyledons either ovate or oblong and much broader than the radicle, or semi-terete and scarcely wider than the radicle.

Shrubs or trees, glabrous to stellately tomentose; leaves alternate, quite entire; inflorescence axillary, cymose or fascicled with the upper cymes usually corymbose or panicked at the apices of the branches or nearly all lateral at leafless nodes.

Described species about 400, natives mostly of South America; 1 species naturalized in South Africa. (Type: *C. nocturnum* Linn.)

NOTE.—In one specimen dissected the flowers were 6-merous.—E. P. P.

7434 7. NICOTIANA Linn., Sp. Pl., ed. 1, p. 180 (1753)

Calyx shorter than the corolla-tube, 5-lobed; tube ovoid or tubular-campulate; lobes shorter than the tube. *Corolla* funnel- or salver-shaped; tube long, cylindric, tubular, or slightly ventricose; lobes 5, shorter than the tube, spreading, induplicate. *Stamens* 5, inserted low down in the corolla-tube, included or exserted, more or less unequal; filaments linear; anthers elliptic, deeply 2-lobed. *Disc* saucer-shaped or 0. *Ovary* 2- (rarely 4 to many-) chambered, with numerous ovules; style linear, included; stigma capitate and obscurely 4-lobed or dilated and shortly and widely 2-lobed. *Fruit* a 2- (rarely 4-) locular capsule, dehiscing to the middle or lower by 2-fid valves. *Seeds* numerous, small, scarcely compressed, granular.

Herbs or subshrubs, rarely subarborescent, usually with glutinous hairs; leaves simple, entire or sinuate; inflorescence a unilateral bracteate or ebracteate raceme, rarely flowers solitary and axillary; flowers white, yellow, greenish, or pink.

Described species between 140 and 150, natives of extra-tropical North and South America, Australia, and the Pacific Islands; 1 species naturalized in South Africa. (Type: *N. tabacum* Linn.)

7456 8. RETZIA Thunb., in Phys. Sällsk. Handl., vol. 1, p. 55, t. 1 (1776)

Calyx shorter than the corolla-tube; 5-lobed; tube cylindric; lobes unequal, linear-lanceolate. *Corolla* 5-lobed, with a dense tuft of wide hairs obscuring the tips; tube cylindric-tubular; lobes usually 5, rarely 6—7, ovate. *Stamens* as many as and shorter than the corolla-lobes, inserted high up in the corolla-tube near the sinuses; filaments shorter than the anthers; anthers sagittate for $\frac{1}{2}$ their length, versatile. *Disc* small. *Ovary* incompletely 2-chambered, ovate-acuminate in outline, with 4 ovules, 2 on each side of the placenta, one of each directed upwards and one downwards and the placenta extending $\frac{1}{2}$ the length of the ovary from the base and incompletely septate in the upper half; style becoming filiform; stigma scarcely dilated, shortly 2-lobed.

An erect, rigidly branched shrub; branches densely villous when young; leaves densely crowded, verticillate, sessile, flowers several together, densely clustered on abbreviated shoots, sessile, erect; bracts leaf-like; bracteoles villous.

Endemic; species 1, recorded from the Stellenbosch, Caledon, and Bredasdorp districts. (Type: *R. capensis* Thunb.)

NOTE.—R. Marloth (*Flora of South Africa*, vol. 3, pt. 1, p. 122) places the genus in a family *Retziaceae*; see also *Flowering Plants of South Africa*, Plate 942.—E. P. P.

164. SCROPHULARIACEAE

Flowers bisexual, usually irregular. Sepals 4—5 or rarely calyx spathaceous or 3-partite. *Corolla* gamopetalous, often more or less 2-lipped; lobes 4—5, very rarely 6, rarely the corolla split open in front; tube various, sometimes spurred or gibbous or with pouches; throat naked or sometimes bearded or with a palate; lobes equal or unequal or corolla bilabiate, with the posterior lobes or upper lip overlapping the lateral lobes or overlapped by the lateral lobes in the bud. *Stamens* usually 4 and didymous, sometimes 2 or 5, exerted or included, inserted at the base of the corolla or on the corolla-tube or in the corolla-throat, alternating with the corolla-lobes; filaments glabrous or hairy, often unequal; anthers 2-theous or 1-theous, very rarely only one theca developed, all perfect or sometimes some absent or abortive or only one theca containing pollen. *Ovary* superior, usually 2-chambered, very rarely 3-chambered or imperfectly 1-chambered; ovules numerous, many, few or only one in each ovary-chamber; style straight or variously curved at the apex; stigma various. *Fruit* usually a loculicidal or septicidal capsule, rarely a berry, more rarely splitting into two 1-seeded cocci.

Annual or perennial herbs or small shrubs, rarely large shrubs or moderately sized trees, sometimes root parasites, often heathlike; leaves opposite, alternate or whorled, rarely radical; stipules 0; inflorescence various or flower solitary.

Genera about 170, species over 2,000, found in Africa, a few in Madagascar and Australia; many cosmopolitan in temperate regions.

NOTE.—Hutchinson, *Families of Flowering Plants*, recognizes 2 families, *Scrophulariaceae* and *Selaginaceae*, which he places in distinct orders.—E. P. F.

- | | | | |
|--|-----|----------------------------------|----|
| 1. Ovary 1-chambered; ovule 1 | ... | 37. <i>Globulariopsis</i> Compt. | |
| Ovary 2-chambered, rarely 3-chambered; ovules 1 to many | ... | ... | 2 |
| 2. Ovule 1 in each ovary-chamber | ... | ... | 3 |
| Ovules 2 to many in each ovary-chamber | ... | ... | 9 |
| 3. Stamens 2 | ... | ... | 4 |
| Stamens 4 | ... | ... | 5 |
| 4. Calyx 4-lobed; staminodes present | | 39. <i>Gosela</i> Choisy | |
| Calyx 5-lobed; staminodes none | ... | 40. <i>Agathelpis</i> Choisy | |
| 5. Corolla-tube split in front to or below the middle | ... | ... | 6 |
| Corolla-tube not split in front | ... | ... | 7 |
| 6. Calyx spathaceous | ... | 33. <i>Hebenstreitia</i> Linn. | |
| Calyx 2-partite | ... | 34. <i>Dichisma</i> Choisy | |
| 7. Calyx 2-lobed or -partite | ... | 36. <i>Walafrida</i> E. Mey. | |
| Calyx 5-lobed or -toothed | ... | ... | 8 |
| 8. One ovary-chamber smaller than the other and containing an abortive ovule | ... | 38. <i>Microdon</i> Choisy | |
| Both ovary-chambers developed and each with a perfect ovule | | 35. <i>Selago</i> Linn. | |
| 9. Ovules few in each ovary-chamber | ... | ... | 10 |
| Ovules many to numerous in each ovary-chamber | ... | ... | 11 |
| 10. Calyx divided to the base; bracts large and evident | | 41. <i>Glumicalyx</i> Hiern | |
| Calyx 5-lobed, 10-ribbed, bracts none | | 47. <i>Hiernia</i> Sp. Moore | |

11. Stamens 5 12
 Stamens 2 or 4, sometimes with a rudimentary fifth stamen or 2—3
 staminodes 18
12. A subcaulescent herb; leaves radical and cauline
 * *Charadrophila* Marl.
 Herbs, shrubs, or trees; leaves not radical 13
13. Woody shrubs, small trees, or woody epiphytes 14
 Herbaceous plants 16
14. An epiphytic shrub 10. *Dermatobotrys* Bolus
 Low shrubs or small trees 15
15. Fruit a berry 11. *Halleria* Linn.
 Fruit a capsule 22. *Sutera* Roth.
16. Calyx longer than the corolla-tube 1. *Verbascum* Linn.
 Calyx usually shorter than the corolla-tube, rarely as long 17
17. Flowers usually large; corolla-lobes obovate, not deeply bifid
 50. *Cycnium* E. Mey.
 Flowers small; corolla-lobes usually deeply bifid
 24. *Zaluzianskya* F. W. Schmidt
18. Stamens 2 19
 Stamens 4 24
19. A shrub with whorled leaves 18. *Ixianthes* Benth.
 Herbs, sometimes aquatic or growing in wet places 20
20. Lower lip corolla with 2 spurs or pouches at the base
 5. *Hemimeris* Linn. fil.
 Lower lip of corolla without spurs or pouches 21
21. Corolla bilabiate; bracts none 32. *Ilysanthes* Rafin.
 Corolla 5-lobed, rarely bilabiate, but if so then bracts present 22
22. Marsh or aquatic herbs 28. *Limosella* Linn.
 Not marsh or aquatic herbs 23
23. Calyx 5-partite to the base 2. *Anticharis* Endl.
 Calyx 5-lobed or bilabiate 24. *Zalunziaskya*
 F. W. Schmidt
24. Fruit a berry 25
 Fruit a capsule 26
25. Flowers axillary, subfasciculate 11. *Halleria* Linn.
 Inflorescence an axillary or terminal cyme 12. *Teedia* Rudolphi
26. Fleshy plants with scale-like leaves 27
 Not as above 28
27. Anthers 2-theous with one theca subulate and barren
 53. *Harveya* Hook.
 Anthers 1-theous 54. *Hyobanche* Linn.
28. Usually acaulescent herbs with radical or rosulate leaves 29
 Small trees, shrubs, herbs, marsh or aquatic plants, leaves not radical 30

29. Corolla-tube companulate, pilose within ***Charadrophila** Marl.
Corolla-tube funnel-shaped, glabrous within **29. Craterostigma** Hochst.
30. Corolla bilabiate with 2 (rarely 1) pits, pouches, or spurs ... 31
Corolla without pits, pouches, or spurs ... 34
31. Corolla with 2 (rarely 1 or 0) pits, pouches, or spurs ... 32
Corolla with 1 pit, pouch, or spur ... 33
32. Corolla 2-lipped ... **4. Diascia** Link & Otto
Corolla 5-lobed ... **6. Colpasia** E. Mey.
33. Posterior corolla-lip 4-cleft; anterior lip entire or emarginate **7. Nemesia** Vent.
Posterior corolla-lip 2-lobed; anterior lip 3-lobed ... 33a
- 33a. Flowers axillary ... **8. Diclis** Benth.
Inflorescence a raceme or spike ... **9. Linaria** Mill.
34. Aquatic or marsh herbs ... 35
Trees, shrubs, or herbs ... 36
35. Leaves usually all radical or some of them fasciculated at the nodes **28. Limosella** Linn.
Leaves opposite or verticillate or divided into capillary segments **26. Linnophila** R. Br.
36. Anthers 1-theous ... 37
Anthers 2-theous or becoming 1-theous by the confluence of the theca
(*Sutera*) ... 42
37. Parasitic or half-parasitic plants ... **52. Striga** Lour.
Plants not parasitic ... 38
38. Woody shrubs ... 39
Erect or prostrate herbs ... 40
39. Leaves opposite; inflorescence a cyme arranged in lax racemes **16. Manuleopsis** Thellung
Leaves fascicled; inflorescence a short raceme **15. Antherothamnus** N. E. Br.
40. Flowers about $\frac{1}{2}$ in. or less long ... **49. Buchnera** Linn.
Flowers 1 in. or more long ... 41
41. Calyx 10-veined or ribbed ... **50. Cycnium** E. Mey.
Calyx not distinctly veined or ribbed **51. Rhamphicarpa** Benth.
42. Longer filaments of stamens or all the filaments with an appendage at the
base ... 43
Filaments without appendages ... 45
43. Shrubs or trees ... **20. Bowkeria** Harv.
Herbs ... 44
44. Calyx broadly winged or ribbed; filaments without a hairpin bend **30. Torenia** Linn.
Calyx not winged or conspicuously ribbed; filaments of upper stamens
with a hairpin bend ... **31. Lindernia** Allioni

* See under Gesneriaceae.

45. Trees or large shrubs... 46
Herbs, if woody, then small undershrubs ... 49
46. Flowers 1 in. or more long ... 13. *Phygelius* E. Mey. 47
Flowers $\frac{1}{2}$ in. or less long ...
47. Corolla 5-lobed; stigma capitate or globose
14. *Freylinia* Colla
Corolla bilabiate; stigma simple or 2-lobed ... 48
48. Calyx tomentose with stellate hairs 19. *Anastrabe* E. Mey.
Calyx not as above ... 17. *Freyliniopsis* Engler
49. Calyx inflated and dry in the fruit ... 42. *Melasma* Berg. 50
Calyx not inflated in fruit ...
50. Parasitic herbs ... 43. *Alectra* Thunb. 51
Non-parasitic plants ...
51. Slender climbing shrubs ... 45. *Buttonia* McKen. 52
Erect or prostrate plants, not climbing ...
52. Calyx 4-lobed ... 55. *Bellardia* All. 53
Calyx 5-lobed or -cleft or sometimes bilabiate ...
53. Posticous segment of calyx much broader than the lateral segments
27. *Bacopa* Aubl. 54
Calyx-lobes or segments more or less equal, except when calyx is bilabiate
54. Calyx more or less pentagonal; corolla-tube shortly tomentose within
25. *Mimulus* Linn. 55
Calyx not as above; corolla-tube sometimes variously hairy within but not tomentose ...
55. Corolla normally with a long cylindric tube ... 56
Corolla normally tubular or companulate ... 58
56. Woody plants ... 22. *Sutera* Roth. 57
Herbaceous plants ...
57. Bracts free from the calyx ... 21. *Manulea* Linn.
Bracts variously adnate to the calyx, very rarely free
24. *Zaluzianskya*
F. W. Schmidt
58. One anther-theca barren ... 59
Both anther-thecae developed ... 60
59. Filaments pilose or with clavate vibratile hairs
46. *Graderia* Benth.
Filaments glabrous ... 48. *Sopubia* Buch-Ham.
60. Filaments of anterior pair of anthers pilose above the middle
44. *Gerardiina* Engl. 61
Filaments glabrous ...
61. Leaves opposite or the upper leaves alternate
23. *Polycarena* Benth. 62
Leaves alternate ...
62. Viscid pubescent herbs ... 2. *Anticharis* Endl.
Low woody undershrubs ... 3. *Aptosimum* Burch.

7460

1. VERBASCUM Linn., Sp. Pl., ed. 1, p. 177 (1753)

Calyx longer than the corolla-tube, 5-partite or deeply 5-cleft, rarely shortly lobed, sometimes covered with stalked glands. *Corolla* rotate, 5-lobed; tube very short, broadly campanulate; lobes slightly unequal, with the two posterior lobes exterior. *Stamens* 5, all fertile, inserted at the base of the corolla-tube; sometimes of unequal lengths; filaments linear, some or all densely villous; anthers horseshoe-shaped, with the thecae confluent. *Ovary* 2-chambered, with numerous ovules, sometimes covered with stalked glands; style terete, sometimes thickened towards the apex; stigma 2-lobed. *Fruit* a globose ovoid or ellipsoid capsule, septicidally bivalved. *Seeds* numerous, ovoid or ellipsoid, wrinkled, not winged.

Robust herbs, often clothed with woolly tomentum; leaves alternate, entire or toothed or lobed; inflorescence a terminal raceme or spike, simple or branched; pedicels usually short and without bracteoles, axillary or fascicled in the axils of bracts or floral leaves.

Described species about 470, found chiefly in the northern temperate regions of the Old World; 1 species naturalized in South Africa and fairly widely spread. (Type: *V. thapsis* Linn.)

7466

2. ANTICARIS Endl., Nov. Stirp. Dec., p. 22 (1839)

Calyx shorter than the corolla, 5-partite to the base, sometimes woolly or pilose with glandular hairs; segments lanceolate. *Corolla* 5-lobed; tube narrow in the lower part, widened above; lobes transversely elliptic, with the 2 posterior lobes exterior. *Stamens* 2—4, inserted near the base of the corolla-tube, included, sometimes the two anterior only perfect and the other one or two shorter and without anthers or absent; filaments linear, longer than the anthers; anthers somewhat transverse, glabrous or hairy, with the thecae confluent. *Disc* annular. *Ovary* ovoid, subacuminate, 2-chambered, with many ovules, sometimes glandular hairy; style filiform, as long as the corolla-tube or shorter, sometimes subclavate above; stigma sometimes capitate. *Fruit* a capsule, ovoid or oblong in outline, somewhat acutely pointed at the apex, dehiscing both loculicidally and septicidally. *Seeds* numerous, small, oblong in outline or ovoid, striate ribbed.

Small erect viscid-pubescent herbs; leaves alternate, entire, sometimes close pressed and overlapping; flowers axillary, solitary, shortly pedicelled, purplish; bracts usually present.

Species about 14, mostly natives of Africa, also recorded from Arabia and East India; 8 species in South Africa, all found in South West Africa, with the exception of 1 species from the northern Transvaal. (Type: *A. arabica* Endl.)

7467

3. APTOSIMUM Burch., Trav. Afr., vol. 1, p. 219 (1824)

(Peliostomum E. Mey.)

Calyx shorter than the corolla-tube, 5-cleft or deeply 5-lobed, sometimes glandular; tube campanulate, often 5-angled, sometimes woolly within; lobes longer or shorter than the tube, linear or ovate, valvate or nearly so. *Corolla* 5-lobed; tube usually globose at the base, then cylindric, then widening into a broadly funnel-shaped tube; lobes nearly equal, much shorter than the tube, ovate, obtuse, with the 2 posterior lobes exterior. *Stamens* 4, didymous, included, inserted near the base of the corolla-tube or about half-way up; posterior pair of stamens, shorter and often with empty anthers; filaments linear; anthers 2-theous, with the thecae confluent, usually hairy. *Disc* usually saucer-shaped. *Ovary* 2-chambered, with several, many, or numerous ovules; style as long as the corolla-tube, sometimes glandular-

pubescent; stigma obscurely bidentate, emarginate, subcapitate, or subclavate. *Fruit* a capsule, compressed at the apex in a plane perpendicular to that of the septum, obcordate in outline, dehiscing septicidally into usually bifid valves. *Seeds* numerous, compressed-globose, sometimes rugose.

Low undershrubs or wiry subherbaceous plants prostrate or densely tufted, mostly woody at the base and usually with a deep tap-root; leaves alternate; usually densely crowded, entire, 1-nerved; inflorescence of abbreviated axillary cymes or flowers sessile or subsessile, axillary and solitary, and blue or purple in colour; bracts 2.

An African genus of 42 species of which 30 are recorded from South Africa, extending from the Transvaal and South West Africa through the north-western and central districts; recorded also from the Mossel Bay, Uitenhage, and Albany districts; one record from Natal. (Type: *A. abietinum* Burch.)

7471 4. DIASCIA Link & Otto, Icon. Pl. Select., p. 7, t. 2 (1820)

Calyx 5-partite almost to the base; segments usually lanceolate, somewhat imbricate, persistent, slightly or scarcely accrescent in fruit. *Corolla* 2-lipped; tube very short or obsolete; posterior lip exterior, bifid or quadrifid; anterior lip trifid or simple, with the middle or only lobe emarginate; all the lobes more or less rounded; throat usually produced below the anterior lip into 2 (rarely 1, very rarely without) pits, pouches, or spurs. *Stamens* 4, didymous, inserted in the mouth of the corolla-tube; anterior pair of stamens usually bent about the base and passing round the posterior pair, in a few species without anthers; some or all of the filaments broadened or dilated, often pilose or with stalked glands, sometimes with a projecting appendage; anther-thecae confluent, usually cohering in pairs. *Ovary* usually ovate in outline, 2-chambered, with many ovules; style simple, terete, shorter or somewhat longer than the ovary; stigma simple or capitate. *Fruit* an obliquely ovoid subglobose or elongated capsule, obtuse at the apex, not or scarcely compressed, dehiscing septicidally, with the valves inflexed at the lateral edges and entire or emarginate at the apex. *Seeds* brown, slightly curved, numerous; testa thin, ribbed or reticulate-foveolate, not winged; embryo straight, minute; endosperm fleshy.

Herbs, usually slender, diffuse or erect, sometimes rigid; leaves opposite or rosulate at the base, with the upper leaves sometimes alternate; inflorescence axillary or consisting of terminal racemes; flowers purple, rosy, or copper coloured.

Endemic; species 51, fairly widely distributed but not recorded from the Transvaal. (Type: *D. bergiana* Link & Otto)

7472 5. HEMIMERIS Linn. f., Suppl., p. 45 (1871)

Calyx 5-partite almost to the base, sometimes glandular-hairy; segments usually lanceolate, somewhat unequal, imbricate in bud. *Corolla* subbilabiate, 4-lobed; tube very short or obsolete; posterior lobe exterior, very shortly emarginate, sometimes papillose on the palate; lower lip with two spurs or small pouches at the base, sometimes with two tooth-like appendages clasping the filaments of the stamens by the side of the corolla-throat. *Stamens* 2; filaments inserted in the mouth of the corolla-tube, linear, kneed and/or with appendages at the base; anther-thecae confluent. *Ovary* 2-chambered, usually ovate in outline, sometimes merging into the style, with numerous ovules; stigma often capitate, thinly stigmatose. *Fruit* a subglobose or ovoid capsule, septicidal from the apex, equalling or somewhat exceeding the calyx. *Seeds* numerous, angular-ovoid or subglobose, reticulate, surrounded by a very narrow membranous wing or not winged.

Small slender annual herbs; leaves opposite or the floral leaves subfasciculate, nearly entire or more or less deeply toothed; flowers yellow, solitary, pedicelled and the upper flowers subfasciculate, often reflexed in fruit.

Endemic; species 9, extending from the Van Rhynsdorp district, through the coastal districts to Swellendam; also recorded from the Calvinia and Sutherland districts. (Type: *H. montana* Linn. f.)

7475 6. COLPIAS E. Mey. ex Benth. in Hook. Compan. Bot. Mag., vol. 2, p. 53 (1836)

Calyx divided almost to the base, villous; lobes somewhat unequal, lanceolate and elliptic, slightly imbricate. *Corolla* 5-lobed; tube short, somewhat declinate at the base, with two gibbosities or short pouches in front; lobes nearly equal; the two upper lobes exterior. *Stamens* 4, didymous, inserted in the corolla-tube, all bearing anthers; filaments thick, terete, glandular; anther-thecae confluent. *Ovary* 2-chambered, ovate in outline, with numerous ovules; style thick, terete, stigma truncate. *Fruit* a capsule, ovoid, acuminate, dehiscent septically; valves bifid. *Seeds* many, black, terete, linear in outline, ribbed, with an oblique face at one end, and a white "aril" at the other end; embryo straight; cotyledons small, linear; radicle terete; endosperm scanty, fleshy.

A low much-branched shrub; branchlets softly pilose; leaves alternate or scarcely opposite, toothed or incised, petioled; flowers sulphur-yellow in colour, pedicelled, axillary, solitary; bracts none.

Endemic; species 1, recorded from Namaqualand. (Type: *C. mollis* E. Mey.)

7476 7. NEMESIA Vent., Jard. Malmaison, vol. 1, p. 41, t. 41 (1803)

Calyx 5-partite, usually almost to the base, somewhat accrescent in fruit, often covered with stalked glands; tube (when present) shallowly campanulate; segments linear, lanceolate, or broadly obovate-elliptic. *Corolla* bilabiate; tube short, produced in front into a dependent spur or pocket or pouch; posterior lip exterior, 4-cleft; anterior lip consisting of one entire or emarginate lobe and having at its base a convex palate which is sometimes papillate. *Stamens* 4, didymous, inserted in the mouth of the corolla-tube; filaments linear; filaments of the anterior pair usually bent round the posterior pair, usually appendaged at the base; anthers usually cohering in pairs about the stigma, sometimes ciliate; anther-thecae confluent. *Ovary* 2-chambered, usually elliptic in outline, with numerous ovules; style thick, terete, shorter than the ovary; stigma 2-lobed or simple. *Fruit* a capsule, laterally compressed to a moderate extent; valves boat-shaped, somewhat keeled, obliquely truncate at the apex, rounded or angular at the outer corner. *Seeds* numerous, usually ellipsoid, more rarely spindle-shaped, with an entire or interrupted membranous wing; testa membranous, sometimes papillose or with membranous outgrowths, sometimes reticulated and pitted; embryo minute, straight; cotyledons linear or elliptic; radicle terete, slightly longer than the cotyledons; endosperm scanty.

Annual or perennial herbs or undershrubs; leaves opposite; inflorescence a terminal raceme or flowers axillary; bracts 0.

An African genus of 69 species; 62 species recorded from South Africa with a general distribution. (Type: *N. foetens* Vent.)

7477 8. DICLIS Benth. in Hook. Compan. Bot. Mag., vol. 2, p. 23 (1836)

Calyx 5-partite, usually glandular-hairy; segments lanceolate or elliptic-lanceolate, scarcely imbricate, persistent, somewhat or scarcely accrescent in fruit. *Corolla* bilabiate; tube short, produced at the base into a dependent

spur; posterior lip exterior, bilobed; anterior lip trifid. *Stamens* 4, didymous; the anterior pair longer than the posterior pair and with the filaments bent round at the base; filaments linear, glandular-hairy; anthers all connate or connate in pairs about the stigma; anther-thecae confluent. *Ovary* 2-chambered, elliptic in outline, glandular-hairy, with numerous ovules; style linear, slightly longer than the ovary; stigma shortly bilobed. *Fruit* a subglobose capsule, not much compressed, emarginate at the apex, with loculicidal dehiscence, with the valves furrowed down the middle and at length bipartite. *Seeds* subglobose; testa brown, membranous, reticulated; embryo small, straight; cotyledons linear; radicle terete, not differentiated from the cotyledons; endosperm fleshy.

Small annual or perennial prostrate or rarely erect herbs; leaves opposite or the upper alternate; flowers axillary; bracts 0.

Species 9, natives of Africa; 1 species recorded from Madagascar; 5 species in South Africa, extending from the Transvaal, Natal, and the eastern Orange Free State to the George district; also recorded from Basutoland and Namaqualand. (Type: *D. reptans* Benth.)

7480

9. LINARIA Mill., Gard. Dict., ed. 6 (1752)

Calyx 5-partite; segments linear or lanceolate and acuminate, persistent, imbricate. *Corolla* bilabiate; tube tubular, produced at the base into a long spur, usually with a rather prominent palate closing the throat; posterior lip exterior, bilobed; anterior lip spreading, trilobed. *Stamens* 4, didymous, inserted at the base of the corolla-tube, included, sometimes a rudimentary fifth stamen present; filaments linear, sometimes dilated at the base; anthers 2-theous, with the thecae parallel. *Ovary* 2-chambered, elliptic in outline, with numerous ovules; style linear, longer than the ovary; stigma small, 2-lobed or usually emarginate. *Fruit* an ovoid or globose capsule, dehiscing by 2 oval-oblong 2—5-toothed persistent valves from near the apex or by two lateral pores. *Seeds* ovoid or discoid or crescent-shaped; testa membranous, rugose; embryo slightly curved; cotyledons oblong; radicle terete, not differentiated from the cotyledons; endosperm fleshy, scanty.

Herbs or undershrubs; leaves opposite, verticillate or alternate, sessile, entire; inflorescence a raceme or spike.

Described species about 285, most of which occur in extra-tropical regions of the northern hemisphere of the Old World; 2 species (naturalized) recorded from the Transvaal and the Cape district. (Type: *L. vulgaris* Mill.)

7492

10. DERMATOBOTRYS Bolus, in Hooker Icon, Pl., t. 1940 (1890)

Calyx 5-partite, many times shorter than the corolla-tube; segments lanceolate, glandular-papillose. *Corolla* 5-lobed; tube cylindric and ribbed in the lower portion, becoming funnel-shaped above, papillose within on the cylindric part; lobes ovate-oblong, obtuse, much shorter than the tube. *Stamens* 5, subsessile, fixed in the corolla-throat; anthers oblong, 2-theous. *Ovary* 2-chambered, ovoid, with numerous ovules; style semi-terete, almost as long as the corolla-tube; stigma minutely bifid. *Fruit* a 2-locular ovoid-conical berry. *Seeds* ellipsoid; testa thin, covered with short disconnected ridges; embryo straight; cotyledons thickish, oblong; radicle terete, not differentiated from the cotyledons; endosperm cartilaginous.

A glabrous epiphytic shrub; leaves opposite, fleshy; flowers usually 3 together, clustered at the nodes on the branchlets; bracts present.

Endemic; species 1, found in Zululand, Natal, Pondoland, and in the Willowvale and Kentani districts. (Type: *D. saundersii* Bolus)

7493

11. HALLERIA Linn., Sp. Pl., éd. 1, p. 625 (1753)

Calyx very much shorter than the corolla-tube, 3—5-lobed, cup-shaped or salver-shaped, or subrotate, tough, persistent. *Corolla* 4—5-lobed, slightly bilabiate, sometimes regular; tube curved or nearly straight, usually oblique at the mouth, trumpet- or funnel-shaped, cylindric below, pubescent within on the cylindric portion; lobes very much shorter than the tube. *Stamens* 4, very rarely 5, didymous or nearly equal, inserted on the lower part of the corolla-tube, slightly exserted; filaments terete; anthers horseshoe-shaped, 2-thecous with the thecae diverging and at length divaricate. *Disc* cushion-shaped. *Ovary* 2-chambered, ovoid, with numerous ovules; style terete, exserted; stigma simple or 2-lobed. *Fruit* a berry. *Seeds* ellipsoid, somewhat plano-convex; testa thin, punctate, with a narrow marginal wing; embryo straight; cotyledons oblong and quadrate; radicle terete, slightly differentiated from the cotyledons; endosperm fleshy.

Glabrous shrubs or small tress; leaves opposite, ovate or elliptic, toothed or subentire; flowers axillary, subfasciculate.

Species 9, natives of Africa and Madagascar; 3 species described from South Africa and recorded from the Transvaal, Natal, and the eastern Orange Free State and through the coastal district to the Clanwilliam district. (Type: *H. lucida* Linn.)

7494

12. TEEDIA Rudolphi, in Schrader, Journ., vol. 2, pp. 288—89 (1799)

Calyx shorter than the corolla-tube, 5-partite, persistent; segments linear, slightly imbricate. *Corolla* deciduous, 5-lobed; tube cylindric, bearded within on the upper portion; lobes shorter than the tube, obovate, imbricate, with the two posterior lobes exterior. *Stamens* 4, didymous or all arising from the same level, sometimes a rudimentary fifth stamen present; upper pair affixed to the middle of the corolla-tube; lower pair affixed near the base of the corolla-tube; filaments shorter or longer than the anthers; anthers oblong, 2-thecous, with the thecae parallel. *Ovary* 2-chambered, subglobose, with numerous ovules; style stout, terete, shorter than the ovary; stigma obliquely capitate. *Fruit* a subglobose berry. *Seeds* numerous, subglobose; testa membranous, punctate; embryo straight; cotyledons oblong; radicle terete, not differentiated from the cotyledons; endosperm fleshy.

Biennial or perennial shrubs; leaves opposite, more or less ovate, denticulate; inflorescence an axillary or terminal cyme; flowers purplish.

Endemic; 4 species described from South Africa, extending from the northern Transvaal, Natal, Basutoland, through the coastal districts to Namaqualand. (Type: *T. lucida* Rudolphi)

7495

13. PHYGELIUS E. Mey. ex Benth. in Hook. Compan. Bot. Mag., vol. 2, p. 53 (1836)

Calyx many times shorter than the corolla-tube; segments ovate, sub-acuminate, persistent, imbricate, not accrescent in fruit. *Corolla* 5-lobed; tube trumpet-shaped, gradually widened upwards, long, incurved or nearly straight, sometimes ventricose at the base; lobes subequal, ovate or oblong, obtuse, with stalked glands on the inner face; the two posterior lobes exterior. *Stamens* 4, sometimes a fifth rudimentary stamen present, didymous, affixed $\frac{1}{2}$ to $\frac{1}{3}$ down in the corolla-tube, exserted; filaments thickish, linear, anthers 2-thecous, with the thecae parallel. *Ovary* 2-chambered, ovate in outline, with numerous ovules; style terete, long exserted; stigma shortly bifid or subcapitate. *Fruit* an ovoid more or less oblique septicidal capsule, with entire valves. *Seeds* subglobose, shortly and bluntly pointed; testa

thin, reticulated; embryo straight; cotyledons oblong; radicle terete, conical; endosperm fleshy.

Robust undershrubs; leaves opposite, petiolate, crenulate-serrulate; inflorescence a terminal secund paniculate cyme.

Endemic; species 2 or 3, extending from the northern Transvaal, Swaziland, Natal, Basutoland, the eastern Orange Free State to the Albany district; also recorded from the Aliwal North, Herschel, Graaff-Reinet and Somerset East districts. (Type: *P. capensis* E. Mey.)

7497 14. FREYLINIA Colla, Hort. Ripul., p. 56 (1824)

Calyx shorter than the corolla-tube, 5-partite, persistent; segments elliptic or lanceolate. *Corolla* 5-lobed; tube funnel-shaped or subcylindric, straight, sometimes glandular without, usually pilose within on the lower half; lobes much shorter than the tube, elliptic, ovate or oblong, obtuse. *Stamens* 4, didymous, occasionally a rudimentary fifth stamen present, inserted about or above the middle of the corolla-tube, or deep in the corolla-throat, included or scarcely exserted; filaments terete or linear; anthers 2-theous, with the thecae parallel. *Disc* saucer- or cushion-shaped. *Ovary* 2-chambered, ellipsoid, with many ovules; style thick, linear, scarcely exserted; stigma capitate or globose. *Fruit* an ovoid obtuse septical capsule; valves bifid. *Seeds* linear or quadrate in outline or ellipsoid; testa membranous, with a marginal wing; embryo straight; cotyledons elliptic or oblong; radicle sometimes differentiated from the cotyledons; endosperm scanty.

Shrubs; leaves opposite, verticillate or scattered, sessile, entire; inflorescence cymose.

An African genus of 5 species; 3 species recorded from South Africa from the northern Transvaal, several south-western districts of the Cape Province, the high mountains in the Laingsburg, Calvinia, and Prince Albert districts, also in Namaqualand and South West Africa. (Type: *F. cestroides* Colla)

NOTE.—In a specimen of *F. tropica* Sp. Moore (Galpin 12290) a seed with 3 cotyledons was noted.—E. P. P.

7497a 15. ANTHEROTHAMNUS N.E. Br., Hook., Ic. Pl., t. 3007 (1922)
(*Selaginastrum* Schinz & Thellung)

Calyx shorter than the corolla-tube, 5-partite almost to the base; lobes linear-oblong, persistent. *Corolla* 5-lobed; tube subcampanulate; lobes shorter than the tube, more or less quadrate. *Stamens* 4 (a fifth filament without an anther present), didymous; upper pair affixed in the corolla-throat or in upper part of the corolla-tube; lower pair near the base of the corolla-tube; filaments linear; anthers subglobose, 1-theous, opening by a short slit. *Ovary* ovate in outline, 2-chambered with many ovules; style terete, included; stigma 2-lobed. *Fruit* a small ovoid capsule; valves bifid. *Seeds* oblong in outline; testa thin, reticulated, with a very narrow marginal wing; embryo straight; cotyledons thin, oblong; radicle terete, scarcely differentiated from the cotyledons; endosperm 0.

A shrub 6—8 ft. high; leaves linear or linear-spathulate, fasciated; inflorescence a short raceme; flowers white, sweet-scented; bracts present.

Endemic, species 1, found in South West Africa, the Transvaal, Bechuanaland and the Kenhardt district. (Type: *A. rigidia* (L. Bolus) Phill.)

7497b 16. MANULEOPSIS Thellung in Vierteljahrsschr. Nat. Ges., vol. 60, p. 405 (1915)

Calyx shorter than the corolla, 5-cleft; segments linear-lanceolate, valvate. *Corolla* 5-lobed; tube subcylindric, straight, pilose within; lobes elliptic, imbricate, with the 2 posterior lobes exterior. *Stamens* 4, didymous, included;

upper stamens inserted in the corolla-throat; lower stamens inserted low down in the corolla-tube; filaments broadly linear, those of the upper pair of stamens scarcely longer than the anthers; anthers kidney-shaped, 1-theous. *Ovary* 2-chambered, ovate in outline, with several ovules in each chamber; style linear, included; stigma minutely bilobed. *Fruit* a septicidal capsule; valves bifid. *Seeds* ellipsoid; testa membranous, reticulated; embryo straight; cotyledons oblong; radicle terete, conical, not differentiated from the cotyledons; endosperm fleshy, scanty.

A shrub about 6 ft. high; leaves opposite, simple, petioled, serrated; inflorescence a cyme arranged in lax racemes.

Endemic; 1 species described from South West Africa. (Type: *M. dinteri* Thellung)

7497c 17. FREYLIOPSIS Engler in Engl. Bot. Jahrb., vol. 57, p. 609 (1922)

Calyx shorter than the corolla-tube, 5-partite; segments very narrow. *Corolla* 5-lobed; tube cylindric; lobes suborbicular; upper lip deeply 2-lobed; lower lip 3-lobed. *Stamens* 4, didymous; upper pair inserted near the throat of the corolla-tube; lower pair lower down in the corolla-tube; filaments short; anther-thecae divergent. *Ovary* oblong in outline, 2-chambered with many ovules; style about twice as long as the ovary; stigma oblong, 2-lobed. *Fruit* a cylindric capsule. *Seeds* oblong in outline, compressed.

A shrub; leaves opposite, long petioled, lanceolate, serrated; inflorescence a panicle.

Endemic; species 1, recorded from South West Africa. (Type: *F. trothae* Engl.)

7498 18. IXIANTHES Benth., in Hook. Comp. Bot. Mag., vol. 2, p. 54 (1836)

Calyx subequalling the corolla-tube, 3-partite; segments leathery, ovate-lanceolate, acuminate, ribbed, valvate, glandular-pubescent within and without; posterior segment broader than the others and trifid at the apex. *Corolla* bilabiate, 5-lobed, densely pilose-viscid without; tube subcampanulate, longitudinally gibbous on the back and with the corresponding fold within densely glandular; lobes subequalling the corolla-tube in length; posterior lip exterior; bilobed; anterior lip slightly shorter and deeply trilobed. *Stamens* 2, included, inserted at the base of the corolla-tube; staminal nodes 2—3; filaments thickish, terete; anthers kidney-shaped, 2-theous, with the thecae confluent. *Ovary* ovate in outline, 2-chambered, densely glandular, with numerous ovules; styles thickish, linear, included; stigma simple. *Fruit* an ovoid sub-4-angled capsule, with septicidal dehiscence; valves shortly bifid. *Seeds* numerous, oblong in outline; testa membranous, reticulated; tegmen membranous; embryo straight; cotyledons thin, lanceolate; radicle scarcely differentiated from the cotyledons.

A shrub with erect branches and the habit almost of a *Retzia*; leaves whorled, long-linear, serrated on the upper half; flowers axillary.

Endemic; species 1, recorded from the Tulbagh, Porterville, and Clanwilliam districts. (Type: *I. retzioides* Benth.)

7499 19. ANASTRABE E. Mey. ex Benth. in Hook. Compan. Bot. Mag., vol. 2, p. 54 (1836)

Calyx as long as the corolla-tube, somewhat leathery, tomentose with stellate hairs; tube campanulate; segments about as long as the tube, ovate, valvate. *Corolla* bilabiate; tube campanulate; lips longer than the tube,

ciliate and glandular without; anterior lip hood-shaped, shortly trifid; posterior lip bipartite, exterior in bud. *Stamens* 4, affixed in the mouth of the corolla-tube, didymous, included; longer pair of stamens curved round the shorter pair; filaments of longer pair broadly linear; filaments of shorter pair almost ovate and shorter than the anthers; anthers 2-theous, horseshoe-shaped. *Ovary* 2-chambered, almost globose, densely tomentose, with many ovules; style stout, semi-terete, included; stigma simple. *Fruit* an ovoid septicidal capsule; valves bifid. *Seeds* with a membranous netted testa.

A shrub or tree; leaves opposite, lanceolate or oblong, entire or serrate; inflorescence in axillary and terminal cymes.

Endemic; species 1, recorded from Natal, Zululand, Pondoland, through the coastal regions to the Willowvale and East London districts. (Type: *A. integrima* E. Mey.)

7500 20. BOWKERIA Harv., Thes. Cap., vol. 1, p. 24, t. 37 (1859)

Calyx about as long as the corolla-tube, 5-partite, usually leathery and ribbed, ciliate, sometimes glandular within; segments elliptic or oblong, with the posterior segment the broadest and bifid at the apex. *Corolla* bilabiate; tube broadly campanulate; upper lip shortly 2-toothed, exterior; lower lip inflated, 3-lobed. *Stamens* 4, didymous, usually included, affixed at the base of the corolla-tube; filaments usually thick and fleshy and linear, sometimes terete; longer filaments with an appendage at the base; shorter filaments often thickened at the base; anthers 2-theous, kidney-shaped, with the thecae confluent at the apex; staminode present or absent. *Ovary* ovate in outline, 2—3-chambered, glandular, with numerous ovules; style thickish, terete; stigma simple or 2-fid. *Fruit* an ovoid or ellipsoid capsule; valves 3 or 2, often somewhat woody. *Seeds* ellipsoid, sometimes angled; testa membranous, often loose, reticulated, somewhat bunched at each end, sometimes with a very narrow membranous margin; embryo straight; cotyledons oblong; radicle terete, not differentiated from the cotyledons; endosperm fleshy, copious.

Shrubs or trees; leaves sessile or petiolate, usually ternate, lanceolate, elliptic, or elliptic-lanceolate, entire or sometimes crenate, tomentose below; inflorescence of cymes arranged in racemes; flowers often on long pedicels; bracts present.

Endemic; 8 species described, extending from the northern Transvaal, Natal, Basutoland, the eastern Orange Free State, East Griqualand to the Albany and Queenstown districts. (Type: *B. triphylla* Harv.)

7517 21. MANULEA Linn., Mant., vol. 1, p. 12 (1767)

Calyx shorter than the corolla-tube, very rarely almost as long, 5-lobed or -partite, glandular, rarely glabrous; tube shallowly saucer-shaped, more rarely campanulate, sometimes ribbed; lobes linear, sometimes spatulate or boat-shaped, sometimes acuminate, equal or more rarely unequal. *Corolla* 5-lobed, usually glandular, very rarely glabrous; tube usually slender and cylindric, sometimes oblique at the mouth, sometimes glandular within, sometimes with papillae or vibratile hairs in the mouth and throat; lobes shorter than the tube, obovate, oblong, or linear, usually entire, sometimes bi- or tri-lobed, flat or recurved, the posterior lobe exterior and shorter and the lobes nearly equal. *Stamens* 4, didymous, all fertile or the upper pair barren or without anthers, included, affixed at various heights in the corolla-tube; the lower pair often sessile; filaments linear, sometimes pilose or with vibratile hairs. *Ovary* ellipsoid or ovoid, 2-chambered, with numerous ovules, glabrous, very rarely glandular; style included, rarely slightly exerted, linear, sometimes with a marginal fringe on the lower half; stigma linear, rarely spatulate or minutely bifid. *Fruit* a septicidal capsule; valves bifid

at the apex. *Seeds* ellipsoid or subglobose; testa membranous, transversely ribbed; embryo straight; cotyledons oblong; radicle terete, slightly longer than the cotyledons and not differentiated from them.

Annual or perennial herbs, rarely undershrubs, usually with a distinct tap-root; leaves sometimes all radical and rosulate, sometimes also cauline and opposite or the uppermost alternate, entire or toothed; the floral leaves smaller and bract-like; inflorescence a simple raceme or spike or more often compound, thyrsoid or panicle, terminal; bracts present or absent.

An African genus of 60 described species; a few species recorded from tropical Africa and Rhodesia, but the majority found in South Africa and widely spread. (Type: *M. cheiranthus* Linn.)

7519

22. SUTERA Roth, Bot. Bemer., p. 172 (1807)

(*Chaenostoma* Benth.; *Lyperia* Benth.; *Jamesbrittenia* O. Kuntze)

Calyx usually shorter than the corolla-tube, rarely as long or longer; normally 5-lobed or -partite, very rarely 7—8-partite, normally glandular or variously hairy; tube usually saucer-shaped; lobes normally longer than the tube, very rarely shorter, linear, sometimes with a membranous margin. *Corolla* 5-lobed or subbilabiate, glandular, hairy or glabrous; tube cylindric, tubular, subcampanulate, often ventricose at the base, rarely ventricose at the apex, sometimes papillose or hairy within; lobes normally shorter than the tube, oblong, ovate, or obovate, sometimes very shallowly lobed or crenate. *Stamens* 4, very rarely 5, affixed at various heights in the corolla-tube, both pairs at the same or different heights, exserted or included; filaments linear; anthers all perfect, 2-theous, with the thecae confluent. *Ovary* ovate or elliptic in outline, 2-chambered with many ovules, usually glabrous, sometimes glandular; style terete, included or scarcely exserted; stigma linear, lanceolate, capitate, subglobose or subclavate, sometimes minutely bifid. *Fruit* a septicidal capsule; valves cleft at the apex. *Seed* ellipsoid; testa somewhat fleshy, with transverse ridges; embryo straight; cotyledons elliptic; radicle terete, not differentiated from the cotyledons.

Woody plants, sometimes with a deep tap-root, annual or perennial, sometimes viscid, often turning black on drying; leaves mostly opposite, more or less toothed or subentire; inflorescence a terminal simple cyme or spike or rarely compound or flowers solitary and axillary; bracts not adhering along the pedicels.

Described species between 130 or 140, the majority of which occur in South Africa and widely distributed; a few species occur in tropical Africa and one species is found in the Canary Islands. (Type: *S. foetida* (Andr.) Roth.)

NOTE.—In a specimen of *S. floribunda* O. Ktze. (Flanagan No. 2788) a flower had 5 perfect stamens.—E. P. P.

7522

23. POLYCARENA Benth. in Hook. Compan. Bot. Mag., vol. 1, p. 371 (1835)

(*Phyllopodium* Benth.)

Calyx 5-lobed or bilabiate, as long as or shorter than the corolla-tube, sometimes 5-ribbed, usually variously glandular-hairy; tube tubular or campanulate; lobes usually linear, about as long as the tube, sometimes one lobe bifid, sometimes with membranous margins. *Corolla* 5-lobed, variously hairy or glabrous, persistent; tube long-cylindric, funnel-shaped, tubular, or subcampanulate, sometimes hairy or papillose in the mouth; lobes variously shaped but rarely linear, sometimes crenate. *Stamens* 4, didymous, included or slightly exserted, usually affixed deep in the corolla-throat; filaments linear; anther-thecae confluent. *Ovary* lanceolate or elliptic in outline, 2-chambered, with many ovules; style usually filamentous, included or slightly exserted, sometimes hairy; stigma linear or subspathulate, rarely

simple. *Fruit* an ovoid oblong or subglobose somewhat compressed capsule, with septicidal dehiscence. *Seeds* prominently 3-winged or 3-angled with a marginal wing or flat at one end and pyramidal with 4 faces, or subglobose and variously angled; embryo small, straight; cotyledons oblong; radicle terete, longer, rarely shorter, than the cotyledons and not differentiated from the cotyledons; endosperm scanty or none.

Annual or rarely perennial herbs, occasionally suffruticose, more or less viscid; leaves opposite or the upper leaves alternate; inflorescence usually a terminal simple spike, sometimes compressed and then appearing capitate; bract more or less adhering to the pedicel or calyx, often longer than the calyx, leaf-like, sometimes 3-lobed or with large marginal teeth.

Endemic; described species about 40, widely distributed but not recorded from Natal. (Type: *P. capensis* (Linn.) Benth.)

NOTE.—In a specimen, *P. silenoides* Harv. (Schltr. 8614), a flower had only 2 stamens.—E. P. P.

7523 **24. ZALUZIANSKYA** F. W. Schmidt, Neue u. Selt. Pfl., p. 11 (1783)

Calyx much shorter than to sometimes as long as the corolla-tube, bilabiate or 5-lobed, when bilabiate then one lip 3-lobed and the other 2-lobed, usually membranous, more rarely somewhat leathery, 5-ribbed, sometimes 2-winged or 5-winged, mostly variously hairy, sometimes glabrous, persistent; tube more or less cylindric; lips or lobes shorter than the tube. *Corolla* 5-lobed, regular or bilabiate, often pilose or glandular; tube normally long-cylindric, eventually splitting at the base, sometimes with a fringe of hairs in the mouth; lobes mostly obovate, often deeply bilobed. *Stamens* normally 4, and didymous, sometimes 2, very rarely occasionally 5, often subsessile, inserted in the corolla-mouth and/or in the corolla-throat, included or slightly exerted; filaments linear. *Ovary* linear-lanceolate, linear-oblong or ovate in outline, 2-chambered with many ovules, with a conspicuous terete gland or a small globose swelling at the base, glabrous; style usually filamentous included or exerted; stigma linear. *Fruit* an ovoid capsule, with septicidal dehiscence; valves bifid. *Seeds* more or less 4-sided; testa whitish; embryo straight; cotyledons elliptic; radicle terete, scarcely differentiated from the cotyledons; endosperm fleshy.

Annual or perennial herbs, more or less viscid and usually turning black in drying; leaves simple, toothed or entire; lower leaves opposite; upper leaves alternate; inflorescence a terminal spike or rarely flowers axillary; bracts variously shaped, rarely very broad, longer or shorter than the calyx, entire or toothed, variously appressed or adnate to the calyx, rarely free.

Endemic; species 36, widely distributed. (Type: *Z. villosa* F. W. Schmidt)

7524 **25. MIMULUS** Linn., Sp. Pl., ed. 1, p. 634 (1753)

Calyx as long as the corolla-tube, 5-toothed, 5-ribbed or pentagonal, glabrous; tube narrowly campanulate; lobes somewhat unequal, shorter than the tube, ovate, acuminate. *Corolla* bilabiate; tube tubular or narrowly campanulate, shortly tomentose within; lips shorter than the tube; posterior lip bilobed, exterior in bud; anterior lip trilobed, usually marked with two protuberances in the throat; all the lobes nearly equal. *Stamens* 4, didymous, inserted at different levels low down in the corolla-tube or at the same level near base of the corolla-tube, included, filaments linear; anthers 2-theuous, with the thecae at length confluent at the apex. *Ovary* oblong in outline, 2-chambered, with many ovules; style terete, included; stigma flattened, shortly 2-lobed. *Fruit* a capsule oblong or sublinear in outline, with loculicidal dehiscence. *Seeds* small, ellipsoid; embryo straight, minute.

Decumbent or erect herbs; leaves opposite, simple, entire or toothed; inflorescence a terminal leafy raceme or the flowers axillary and solitary; peduncles ebracteate.

Described species about 180, found chiefly in extra-tropical America; 1 species in South Africa, fairly widely distributed. (Type: *M. ringens* Linn.)

7532

26. LIMNOPHILA R. Br., Prodr., 9, 442 (1810)

Calyx longer or shorter than the corolla-tube, 5-lobed, sometimes glandular; tube campanulate; lobes ovate or linear-lanceolate, sometimes acuminate, imbricate, subequal or the posticous larger. *Corolla* 5-lobed or subbilabiate; tube campanulate, funnel-shaped, or cylindric, sometimes pilose in the throat; lobes elliptic or ovate, slightly or much shorter than the tube or upper lip, entire or shortly bifid and the lower lip 3-fid. *Stamens* 4, didymous or all equal, sometimes sessile, inserted in the mouth of the corolla-tube or low down in the corolla-tube, included; filaments linear; anthers 2-theccous, with the anthers of each pair of stamens sometimes cohering. *Ovary* ovate in outline, 2-chambered with many ovules; style linear; stigma sometimes subsessile or bent at right angles to the style and forming a foot. *Fruit* a septicidal and loculicidal capsule, ovate or oblong in outline; valves 4. *Seeds* ellipsoid; testa thin, dark coloured; embryo straight; cotyledons oblong; radicle terete, not differentiated from the cotyledons; endosperm fleshy.

Glabrous or slightly pubescent herbs, often aromatic and having pellucid dots, usually growing in marshy places or aquatic; leaves opposite or verticillate or divided into capillary segments in the aquatic species; inflorescence sometimes a terminal raceme or flowers axillary, solitary and pedicelled; bracts small, linear, inserted under the calyx.

Described species 43, natives of India, Burma, the Malay Archipelago, China, Australia, Africa; 2 species recorded from South Africa. (Type: *L. gratioides* R. Br.)

7546

27. BACOPA Aubl., Hist. Pl. Gui. Franc., vol. 1, p. 128, t. 49 (1775)

(*Moniera* R. Br.)

Calyx 5-partite; segments erect, imbricate in bud, with the posticous segment broadest and the two lateral sepals often very narrow. *Corolla* subbilabiate; tube cylindric; posterior lip exterior in bud, emarginate or 2-lobed; lower lip 3-lobed, with all the lobes equal or the two posterior connate higher up than the other three. *Stamens* 4, didymous, included, inserted on the corolla-tube, anthers 2-theccous, with the thecae distinct, contiguous, parallel or divaricate or finally confluent. *Disc* present or obsolete. *Ovary* 2-chambered, with many ovules; style dilated at the apex, entire or shortly 2-lobed. *Fruit* a globose or ovoid capsule, with loculicidal dehiscence; valves bifid or bipartite. *Seeds* usually striate and transversely reticulate.

Erect, diffuse, or prostrate herbs, sometimes aquatic, glabrous, more rarely pubescent, often punctate; leaves opposite, entire or dentate or, in the aquatic species, multisept into capillary segments when submerged; inflorescence a terminal raceme or flowers axillary and solitary and sessile or pedicelled.

Species about 50, chiefly natives of tropical America; 1 species recorded from South Africa from the Herbert district and Zululand. (Type: *B. aquatic* Aubl.)

7558

28. LIMOSELLA Linn., Sp. Pl., ed. 1, p. 631 (1753)

Sepals slightly shorter than the corolla-tube, 5- (rarely 4-) lobed, strongly or feebly 5-nerved, usually membranous, rarely somewhat leathery, glabrous; tube campanulate; lobes ovate, shorter than or about as long as the tube.

Corolla 5-lobed, glabrous; tube funnel-shaped or campanulate; lobes subequal, imbricate, with the posterior lobe exterior, oblong, shorter than the tube, pilose on the inner face. *Stamens* 4, didymous (rarely only 2), affixed about the middle of the corolla-tube, included; filaments linear, with the filaments of the lower stamen crossing the filament of the stamen immediately above it at right angles. *Ovary* globose or elliptic in outline, 2-chambered, with many ovules; style terete, included; stigma capitate. *Fruit* a subglobose capsule, almost indehiscent or at length dehiscent. *Seeds* subglobose, 4-sided, or oblong in outline; testa brown, thin, variously ribbed or reticulated; embryo straight; cotyledons oblong or linear; radicle terete, scarcely differentiated from the cotyledons; endosperm fleshy.

Marsh or aquatic herbs, usually creeping and usually with stolon-like stems rooting at the nodes or rarely caulescent; leaves usually all radical or some of them fasciculated at the nodes, rarely alternate on elongated prostrate stems or branches; flowers inserted among the leaves on scape-like peduncles or subsessile, white, pale-rosy, or bluish.

Species about 15, widely distributed; 5 or 7 species recorded from South Africa. (Type: *L. aquatica* Linn.)

7560 29. CRATEROSTIGMA Hochst. in Flora, vol. 24, p. 668 (1841)

Calyx about as long as or slightly shorter than the corolla-tube, 5-lobed, 5-ribbed, hairy; tube campanulate; lobes ovate, acuminate, shorter than the tube. *Corolla* bilabiate; tube funnel-shaped; posterior lip entire or emarginate, exterior; anterior lip 3-lobed and often bearded at the base. *Stamens* 4, didymous, affixed in the mouth and deep in the throat of the corolla-tube; filaments of upper stamens abruptly bent and appendaged at the base, linear; filaments of lower stamens straight, linear; anthers 2-theccous, approximating or cohering in pairs, sometimes scantily pilose. *Ovary* ellipsoid or elliptic in outline, 2-chambered, with many ovules; style linear, exerted or scarcely exerted; stigma of two membranous lobes which are sometimes ciliate. *Fruit* an ovoid or ellipsoid capsule, with septicidal dehiscence. *Seeds* globose; testa thin, brown, reticulated and punctate; embryo straight; cotyledons oblong; radicle stout, terete, not differentiated from the cotyledons; endosperm fleshy.

Small perennial herbs, acaulescent or acauline; radical leaves rosulate; cauline leaves opposite; all leaves entire or nearly so; inflorescence a spike or raceme, rarely the flowers solitary.

Described species 20, natives of Africa and Madagascar; 3 species recorded from South Africa, found in South West Africa, the Transvaal, the eastern Orange Free State and Pondoland. (Type: *C. plantagineum* Hochst.)

7561 30. TORENIA Linn., Sp. Pl., ed. 1, p. 619 (1753)

Calyx somewhat shorter than the corolla-tube, 3—5-toothed or bilabiate, broadly 3—5-winged, or ribbed. *Corolla* bilabiate; posterior lip bilobed, exterior; anterior lip 3-lobed; tube curved, cylindric below, widening above. *Stamens* 4, didymous, affixed in the throat of the corolla-tube; filaments of the anterior pair longer than the others, arched and connivent under the posterior corolla-lip; all filaments with a filiform or tooth-like appendage at the base; anthers 3-theccous, closely approximate or cohering in pairs, with the thecae usually confluent at the apex. *Disc* prominent, saucer-shaped. *Ovary* oblong in outline, 2-chambered, with many ovules; style semi-terete, exerted; stigma of two large membranous lobes. *Fruit* an ovoid or ellipsoid capsule, with septicidal dehiscence. *Seeds* variously angled; testa thin; embryo straight; cotyledons oblong; radicle terete, not differentiated from the cotyledons; endosperm fleshy.

Glabrous, pubescent or hirsute herbs; leaves opposite, entire or toothed; inflorescence a short few-flowered fascicle-like raceme, more rarely elongated, terminal or pseudo-axillary; pedicels ebracteate.

Described species about 74, natives of Asia, tropical Africa, and tropical America; 1 species recorded from the Transvaal and Natal. (Type: *T. asiatica* Linn.)

7562 31. LINDERNIA Allioni in Misc. Taur., vol. 3, p. 178, t. 5, fig. 1 (1755)

Calyx shorter than the corolla-tube, 5-partite, sometimes ribbed, glabrous; tube campanulate or tubular-campanulate; lobes equal, linear, linear-lanceolate, or ovate, shorter than the tube. *Corolla* bilabiate; tube funnel-shaped, sometimes papillose within under the lower lip; upper lip erect, broad, concave, emarginate or shortly 2-fid, exterior; lower lip larger, spreading, with 3 broad subequal lobes. *Stamens* 4, all perfect, didymous; upper pair affixed in corolla-mouth; lower pair affixed deep in the corolla-throat; filaments of upper stamens recurved or bent in a hairpin-like bend, linear, with a large flat appendage or other appendage at the base; filaments of lower stamens straight, linear; anthers 2-theous, closely approximating or cohering in pairs, with the thecae divaricate and often confluent at the apex. *Ovary* globose, sometimes with a solitary terete gland at the base, 2-chambered, with many ovules; style linear, slightly widening above; stigma of 2 large membranous lobes. *Fruit* an ovoid or globose or ellipsoid capsule, with septicidal dehiscence.

Simple or branched glabrous or pubescent usually annual herbs; leaves opposite, entire or toothed, sometimes all radical; inflorescence a terminal raceme or flowers solitary in the axils of the leaves.

Described species 50, natives of the hotter regions of Asia, Africa, and Australia; 1 species extends to south and west Europe, and 2 to tropical America; 2 species recorded from the Transvaal. (Type: *L. pyxidaria* All.)

7564 32. ILYSANTHES Rafin., Ann. of Nat., p. 13 (1820)

Calyx shorter than the corolla-tube, 5-lobed or -partite to the base, sometimes ribbed; tube narrowly campanulate or tubular; segments or lobes linear, lanceolate, or ovate, shorter than or about as long as the tube, sometimes sparsely glandular. *Corolla* bilabiate; tube cylindric below and campanulate above or tubular and widening upwards, sometimes with 2 longitudinal lines of glands within; posterior lip shortly bifid, exterior; anterior lip 3-lobed, with the lobes nearly equal. *Fertile stamens* 2, affixed to the throat or at the mouth of the corolla-tube, included; filaments linear or filiform; anthers 2-theous, with the thecae divaricate; staminodes 2, affixed in the mouth or throat of the corolla-tube, sometimes 2-lobed; filaments sometimes glandular. *Ovary* 2-chambered with many ovules; style filiform; stigma shortly bilamellate. *Disc*, when present, cushion-like or unilateral. *Fruit* a capsule, ovate, oblong to linear in outline with septicidal dehiscence. *Seeds* ellipsoid, with a very narrow marginal wing; embryo straight; cotyledons oblong; radicle terete, not differentiated from the cotyledons; endosperm none.

Small, usually annular herbs, creeping or erect, simple or branched, sometimes growing in marshy places or in water; leaves opposite, entire or toothed, sometimes all radical; in some aquatic species rosulate at the ends of the stems; inflorescence a terminal raceme or flowers solitary terminal or axillary; pedicels ebracteate.

Described species about 50, natives of Africa, Madagascar, North and South America, Australia, and Asia; 7 species recorded from South Africa, found in the Transvaal, Basutoland, Zululand, Natal, to the south-eastern and south-western districts of the Cape Province, also in South West Africa. (Type: *I. riparia* Rafin.)

7566

33. *HEBENSTREITIA* Linn., Sp. Pl., ed. 1, p. 629 (1753)

Calyx spathaceous, membranous or hyaline, with the apex posticous and entire or emarginate, glabrous or hairy. *Corolla* with a slender tube which is divided in front to or below the middle, expanded behind into a flat or concave 4-lobed limb, sometimes with a row of stalked papillae at the base of the lobes; lobes equal or sometimes with the two lateral lobes larger than the middle lobes, with the middle lobes sometimes longer than the lateral lobes and more or less connate, occasionally with a fifth minute lobe in the fissure of the tube. *Stamens* 4, didymous, all fertile, affixed at the base of the corolla-limb; filaments short, linear; anthers 2-theous, oblong or linear. *Ovary* oblong or elliptic in outline, 2-chambered, with a single pendulous ovule in each chamber, often with a solitary lateral gland at the base; style terete or linear, usually shorter than the corolla-tube; stigma simple or linear. *Fruit* oblong or ovate in outline, sometimes terete or compressed, rarely separating spontaneously into distinct cocci, both loculi perfect or one abortive. *Seeds* linear or oblong in outline, convex on one face and flat on the other face, sometimes boat-shaped, sometimes with a narrow marginal wing; testa tough; embryo straight, terete; cotyledons linear or oblong; radicle not differentiated from the cotyledons; endosperm fleshy or scanty.

Shrub, undershrubs, or annual herbs, sometimes from a stout woody root-stock; leaves alternate or the lower opposite, often narrow, entire or often toothed, sometimes short and broad; inflorescence a terminal, often a dense short or elongate spike; flowers sessile; bracts broad or lax, exceeding the calyx.

An African genus of 44 described species, 3 of which occur in tropical Africa, the others confined to South Africa and found from South West Africa, through the coastal districts to Natal, Basutoland, and the Transvaal. (Type: *H. dentata* Linn.)

7567 34. *DICHISMA* Choisy in Mém. Soc. Phys. Genève, vol. 2, pt. 2, p. 93 (1823)

Calyx 2-partite; segments lateral, linear or lanceolate-oblong, sometimes with membranous margins and sometimes ciliate. *Corolla* with the tube split in front to or below the middle, dilated behind and expanded into a flat or concave 4-lobed limb; tube cylindric, sometimes glandular within; lobes subequal or the middle pair longer. *Stamens* 4, didymous, affixed to the margins of the fissure below the lobes or the lower pair deeper down in the corolla-tube; filaments linear or terete; anthers 2-theous, oblong or linear, sometimes longer than the filaments. *Ovary* elliptic in outline, 2-chambered, with a single pendulous ovule in each chamber, usually with a single lateral gland at the base; style terete, included or exerted; stigma simple or linear. *Fruit* oblong or ovate in outline, sometimes subterete, rarely spontaneously breaking up into cocci, usually with a seed in each loculus. *Seed* subterete, oblong in outline; embryo straight, terete; cotyledons oblong; radicle truncate at the tip, not differentiated from the cotyledons; endosperm fleshy.

Small branched shrubs or annual herbs; leaves alternate or the lower opposite, often narrow and toothed, rarely short and broad; inflorescence a dense short or elongate terminal spike, rarely a head; bracts imbricate, ovate or lanceolate, sometimes more or less leaf-like, sometimes densely villous.

An endemic genus of 13 described species, extending from South West Africa through the coastal districts to the Port Elizabeth district. (Type: *D. capitatum* Choisy)

7568

35. *SELAGO* Linn., Sp. Pl., ed. 1, p. 629 (1753)

(Cromidon Compton)

Calyx shortly or deeply 5-lobed, glandular or hairy, more rarely glabrous; tube campanulate, saucer-shaped, more rarely tubular; lobes equal or unequal, lanceolate, oblong, or linear, sometimes with membranous margins, sometimes ciliate. *Corolla* 5-lobed, very rarely 4-lobed, sometimes subbilabiate; tube cylindric, funnel-shaped, sometimes ventricose at the base, sometimes glandular within; lobes equal or unequal, oblong or obovate. *Stamens* 4, didymous, included or exserted, inserted at the base of the corolla-throat or the lower stamens deep down in the corolla-tube; filaments subterete or linear; anthers 1-theous. *Ovary* subglobose or elliptic or ovate in outline, 2-chambered, with a solitary pendulous ovule in each chamber, often with a single lateral gland at the base; style linear or subterete, often with scattered hairs; stigma simple or linear. *Fruit* ovoid or subglobose or oblong in outline, included within the calyx, often breaking up into cocci; pericarp crustaceous or indurated. *Seeds* flat on one face, concave on the other; embryo straight; cotyledons oblong; radicle terete, not differentiated from the cotyledons; endosperm fleshy.

Shrubs or undershrubs, usually dwarf, sometimes with a stout woody rootstock, much branched and heath-like, sometimes annual herbs more or less decumbent at the base; leaves solitary or fascicled, alternate or the lower sometimes opposite or subopposite, often small and narrow, sometimes broader, oblong, elliptic or spatulate, often entire, sometimes more or less toothed; inflorescence spicate, capitate, or paniculate, frequently with the spikes or heads disposed in elongated panicles or broad corymbs; bracts narrow or broad, often more or less imbricate, sometimes adnate to the pedicels, often hairy.

An African genus of 178 described species, of which number about 20 are found in tropical Africa and the remainder in South Africa, widely distributed. (Type: *S. corymbosa* Linn.)

7568a

36. *WALAFRIDA* E. Mey., Comm. Pl. Afr. Austr., p. 272 (1837)

Calyx usually shorter than the corolla-tube, 3-lobed or 3-partite almost to the base, with the middle lobe usually smaller or sometimes minute or wanting; lobes or segments lanceolate, linear, or ovate. *Corolla* equally or unequally 5-lobed, usually glabrous; tube cylindric, funnel-shaped, subcampanulate or campanulate; lobes oblong to ovate. *Stamens* 4, didymous, affixed in the corolla-throat or the lower pair deep in the corolla-tube, exserted or included; filaments linear or terete; anthers 1-theous. *Ovary* ovoid or oblong in outline, 2-chambered, with a single pendulous ovule in each chamber, usually with a conspicuous or small lateral gland at the base; style linear or subterete, included or exserted, sometimes hairy; stigma usually linear. *Fruit* ovoid, globose, or oblong in outline, included within the calyx, often separating into distinct cocci when mature. *Cocci* convex on one face, flat on the other face.

Shrubs or undershrubs, often heath-like, dwarf, or much branched, sometimes with a large woody rootstock, sometimes small annual herbs; leaves narrow or small, sometimes minute, alternate, often crowded in axillary fascicles, entire; inflorescence of short terminal spikes or heads which are often aggregated into corymbs or narrow panicles at the summit of the branches; bracts ovate or narrow, more or less imbricate, usually partly adnate to the calyx.

Species between 30 and 40, nearly all of which occur in South Africa and widely distributed; about 6 species in tropical Africa and a single species in Madagascar. (Type: *W. nitida* E. Mey.)

NOTE.—In Meyer's original description he describes the calyx as "subbilabiato-quadrupartitus", but both in Drege's specimen from the Kabeljousrivier and Ecklon and Zeyher's specimen from the Vanstadensberg, cited by Meyer, the calyx is only 3-partite.—E. P. P.

- 7568b 37. **GLOBULARIOPSIS** Compton, Trans. Roy. Soc. S. Afr., vol. 19, p. 309 (1931)

Calyx shorter than the corolla-tube, 5-lobed, villous; tube campanulate; lobes about as long as the tube, lanceolate. *Corolla* 5-lobed; tube campanulate above, tubular below; lobes shorter than the tube, elliptic-oblong, with one lobe slightly larger than the others. *Stamens* 4, didymous, affixed about the middle of the corolla-tube, included; filaments linear; anthers 1-theous. *Ovary* ellipsoid, 1-chambered, with a single ovule; style semiterete, hardly exserted; stigma simple. *Fruit* not seen.

A low heath-like undershrub; leaves opposite, linear; inflorescence terminal, forming a more or less globose spike; bracts solitary, not adnate to the calyx.

Endemic; species 1, recorded from the summit of the Wittebergen in the Laingsburg district. (Type: *G. wittebergensis* Compton)

- 7569 38. **MICRODON** Choisy in Mém. Soc. Phys. Genève, vol. 2, pt. 2, p. 97 (1823)

Calyx shorter than the corolla, 5-lobed, 5-ribbed, sparsely hairy or papillose or glabrous; tube tubular; lobes shorter than the tube, ovate. *Corolla* somewhat fleshy, 5-lobed or subbilabiate, glabrous; tube cylindric or tubular; lobes shorter than the tube, oblong or oblong-linear. *Stamens* 4, didymous; upper pair affixed in the mouth of the corolla-tube, evidently or slightly exserted; lower pair affixed in the upper part of the corolla-tube; filaments linear; anthers 1-theous. *Ovary* oblong in outline, 2-chambered, with one chamber smaller and containing an abortive ovule, with a small lateral gland at the base; style terete, exserted; stigma linear. *Fruit* included within the calyx, by abortion 1-locular.

Small much-branched heath-like shrubs; leaves sometimes fascicled, spatulate, elliptic, obovate, or linear; inflorescence a spike; bracts evident; broadly ovate, sometimes subacuminate, adnate to the base of the calyx, sometimes scurfy.

Endemic; species 6, extending from the Clanwilliam district to the Worcester district; also recorded from the Ceres district and South West Africa. (Type: *M. ovatus* (Linn.) Choisy)

- 7570 39. **GOSELA** Choisy in DC. Prodr., vol. 12, p. 22 (1848)

Calyx much shorter than the corolla, 4-lobed, with one lobe bifid, persistent, villous; tube shallowly campanulate; lobes linear, longer than the tube. *Corolla* 5-lobed; tube long-cylindric; lobes very much shorter than the tube, oblong. *Stamens* 2, affixed deep in the corolla-throat, included; filaments linear, shorter than the anthers; anthers 1-theous; staminodes 2, affixed in the mouth of the corolla-tube, with sterile anthers. *Ovary* ellipsoid, 2-chambered, with a solitary ovule in each chamber, with a single lateral gland at the base; style terete, exserted; stigma linear. *Fruit* enclosed in the persistent calyx, convex on one side, curved, bluntly beaked, 1-locular by abortion. *Seed* with fleshy testa; embryo slightly curved; cotyledons linear; radicle conical, not differentiated from the cotyledons; endosperm 0.

A small much-branched heath-like shrub; leaves linear, more or less fascicled; inflorescence a spike; bracts evident, lanceolate, subacuminate, free from calyx, villous.

Endemic; species 1, recorded from the Clanwilliam, Ceres and Piquetberg districts. (Type: *G. eckloniana* Choisy)

- 7571 40. **AGATHELPIS** Choisy in Mém. Soc. Phys. Genève, vol. 2, pt. 2, pp. 85—89 (1823)

Calyx shorter than the corolla, 5-lobed, ribbed, usually glandular on 2 ribs only; tube tubular; lobes shorter than the tube, linear. *Corolla* equally

5-lobed; tube cylindric; lobes thick, elliptic or oblong. *Stamens* 2, included, affixed to the base of the corolla-tube; filaments adnate to the corolla-tube for almost the whole of their length, with the free portion shorter than the anthers; anthers 1-thecous. *Ovary* 2-chambered, with only 1 ovule developed; style filamentous, slightly exserted; stigma linear. *Fruit* included within the calyx, oblong in outline, by abortion 1-locular and 1-seeded.

Small much-branched heath-like shrubs; leaves linear or more rarely linear-spathulate, often fascicled; inflorescence a narrow elongated many-flowered spike; bracts ovate-lanceolate or lanceolate, keeled, adnate to the base of the calyx.

Endemic; species 3 or 4, ranging from the Clanwilliam to the Swellendam districts; also recorded from the Ceres district and doubtfully from South West Africa. (Type: *A. angustifolia* Choisy)

7593a 41. GLUMICALYX Hiern in Hook. Icon. Pl., t. 2769 (1903)

Calyx almost as long as the corolla-tube, divided to the base; segments linear, spatulate and membranous above. *Corolla* 5-lobed, subbilabiate; tube funnel-shaped; posterior lobe bifid; anterior lobe trifid; all lobes elliptic. *Stamens* 4, didymous, slightly exserted; lower pair affixed to the base of the corolla-tube; filaments adnate to the corolla-tube for $\frac{1}{2}$ their length; upper pair affixed to the middle of the corolla-tube; all anthers perfect, 1-thecous. *Ovary* somewhat ellipsoid, furrowed, 2-chambered, with few ovules in each chamber, with a single lateral gland at the base; style linear, slightly exserted; stigma linear.

A small shrub, branching at the base from a woody stem; leaves alternate, more or less spatulate, slightly crenate; inflorescence terminal, subcapitate; bracts evident, membranous, obovate, deeply concave, free from the calyx.

Endemic; species 1, recorded from Basutoland and the Mount-aux-Sources. (Type: *G. montanus* Hiern)

7597 42. MELASMA Berg., Descr. Pl. Cap., p. 162, t. 3, f. 4 (1767)

Calyx as long as or almost as long as the corolla-tube, 5-lobed, 10-ribbed, angular, inflated and dry in fruit; tube campanulate, intruse at the base; lobes valvate, shorter than the tube, ovate. *Corolla* 5-lobed, early deciduous; tube narrow below, becoming subcampanulate above, sometimes ribbed and pilose on the ribs; lobes imbricate, more or less ovate, shorter than the tube. *Stamens* 4, didymous or nearly equal, affixed near the base of the corolla-tube, included; filaments linear, pilose; anthers 2-thecous, with the thecae apiculate or acuminate. *Disc* annular, fleshy. *Ovary* ovate in outline, 2-chambered, with a thick fleshy placenta and many ovules; style terete; stigma clavate or thickened and terete. *Fruit* a loculicidal capsule, included in the calyx. *Seed* ellipsoid, in the middle drawn out and narrowed at each end; testa transparent, reticulated; embryo straight; cotyledons elliptic; radicle thick, terete, not differentiated from the cotyledons; endosperm fleshy.

Herbs, with scabrous stems; leaves opposite or alternate in the inflorescence, linear or linear-lanceolate, remotely toothed, sessile or nearly so; flowers solitary in the axils of the upper leaves, pedicelled, usually long-pedicelled; bracteoles 2, variously placed.

Described species 5, one of which is widely distributed in South Africa, one in tropical Africa and three in tropical America. (Type: *M. scabrum* Berg.)

NOTE.—Hemsley and Skan keep *Melasma* and *Alectra* separate, the difference being:—

Melasma: pedicelled flowers; calyx inflated in fruit; corolla early deciduous.

Alectra: sessile flowers; calyx not inflated in fruit, corolla not early deciduous.—E. P. P.

- 7597a 43. *ALECTRA* Thunb., Nov. Gen. Pl., p. 81 (1784)
(*Melasma* Berg. of Fl. Cap. partly)

Calyx about as long as the corolla-tube, 5-lobed or rarely subbilabiate, 10-nerved or 10-ribbed, with reticulate veining, hirsute, not enlarged in fruit; tube campanulate; lobes about as long as the tube, usually ovate, sometimes lanceolate-linear. *Corolla* 5-lobed, rarely subbilabiate, longitudinally veined, withering early and persistent within the calyx around the ripe capsule; tube often globose at the base, then narrowly campanulate; lobes ovate, about as long as the tube. *Stamens* 4, didymous or sometimes nearly equal, affixed about the middle of or near the base of the corolla-tube, included; filaments linear, sometimes curved, glabrous or pilose above; anthers 2-thealous, usually apiculate or bluntly and shortly beaked, glabrous or pilose. *Ovary* compressed or orbicular in outline or obovoid, 2-chambered, with a thick placenta, with many ovules; style linear, thickish; stigma somewhat broadened and curved, rarely flat and membranous. *Fruit* a globose or compressed capsule, enclosed in the calyx, with loculicidal dehiscence. *Seeds* with a funnel-shaped transparent membranous delicately reticulated testa open at either end, with a globose structure within containing a minute embryo.

Annual or perennial erect usually hispid herbs, parasitic on roots of other plants, rarely a small acaulescent plant about 1 to 2 cm. high, turning black in drying; leaves opposite or alternate, sessile or shortly stalked, entire or toothed, sometimes leaves not developed; inflorescence usually a dense spike; flowers usually yellow, veined with brown or red, solitary in the axils of the leaves or bracts, sessile or very shortly pedicelled; bracteoles 2, close under the calyx.

Described species about 40, natives of Africa, Madagascar and India; 8 species in South Africa widely distributed. (Type: *A. capensis* Thunb.)

- 7605 44. *GERARDIINA* Engler in Engl. Bot. Jahrb., vol. 23, p. 507, t. 10, G.M. (1897)

Calyx shorter than the corolla-tube, 5-lobed, somewhat leathery, pustulate, persistent; tube campanulate; lobes shorter than the tube, ovate, valvate. *Corolla* 5-lobed, slightly bilabiate, with small scattered glands; tube narrowed below, becoming campanulate above. *Stamens* 4, didymous, affixed in the narrow part of the corolla-tube, included; filaments linear, those of the anterior pair twice as long as those of the posterior pair and pilose above the middle; anthers 2-thealous, with the thecae separate. *Ovary* subovoid, 2-chambered, with a thick placenta and numerous ovules; style thickish, linear, persistent; stigma flattened. *Fruit* an ovoid capsule contained in the calyx. *Seeds* linear or linear-cuneiform.

An erect herb; leaves opposite, long-linear, entire; inflorescence a terminal raceme; bracts about equalling or shorter than the pedicels.

A monotypic genus, found in Swaziland and the Transvaal, also occurs in tropical Africa. (Type: *G. angolensis* Engl.)

- 7611 45. *BUTTONIA* McKen. ex Benth. in Hook. Icon. Pl., vol. 11, p. 63, t. 1080 (1871)

Calyx shorter than the corolla-tube, 5-lobed, somewhat leathery, persistent; tube campanulate, with a transverse flap on one side; lobes shorter than the tube, ovate. *Corolla* 5-lobed; tube cylindric below, becoming campanulate above, distinctly reticulated; lobes semi-orbicular, shorter than the tube. *Stamens* 4, didymous, included; lower pair affixed in the upper part of narrow portion of the corolla-tube; upper pair affixed in lower part of the widened portion of corolla-tube; filaments thickened, linear; anthers 2-thealous,

with one theca empty and vermiform, with the empty theca absent on the lower stamens. *Ovary* 2-chambered, with numerous ovules; style linear, curved above, exserted; stigma terminal. *Fruit* a thin-walled woody capsule, enclosed in the persistent calyx. *Seed* of two connate membranous reticulated funnel-shaped structures (testa) which are easily separable and which are angled above and delicately horizontally striate and with several openings; the minute embryo contained in an ellipsoid body.

Slender climbing shrubs; leaves opposite, pinnatisect, petioled; flowers solitary, axillary, pedicelled; bracts small, deciduous.

An African genus of 3 species; 2 species recorded from the Transvaal, Zululand, and Natal. (Type: *B. natalensis* McKen.)

7614 **46. GRADERIA** Benth. in DC. Prodr., vol. 10, p. 521 (1846)

Calyx 5-lobed, ribbed, pilose or with glandular hairs, persistent; lobes linear-lanceolate, longer than the tube. *Corolla* 5-lobed, pilose; tube funnel-shaped; lobes obovate, shorter than the tube. *Stamens* 4, didymous, affixed near the base of the corolla-tube, included; filaments linear, pilose or with clavate vibratile hairs; anthers 2-theous, separate, with one theca barren. *Ovary* ovate, 2-chambered, with many ovules; style linear, included; stigma terminal, sometimes subcapitate. *Fruit* an acute or acuminate capsule, included in the persistent calyx, with loculicidal dehiscence. *Seeds* ellipsoid; testa membranous, reticulated; tegmen membranous; embryo straight; cotyledons fleshy, oblong; radicle conical, not differentiated from the cotyledons.

Perennial undershrubs with the stems from a woody rootstock; stems erect or more or less trailing; leaves opposite or alternate, entire or remotely toothed; flowers axillary, subsessile.

Species 3; 2 species found in South Africa and extend from the Transvaal and Natal to the Riversdale district; 1 species recorded from the Island of Socotra. (Type: *G. scabra* Benth.)

7615 **47. HIERNIA** Sp. Moore in Journ. Bot., vol. 18, p. 211 (1880)

Calyx about as long as the corolla-tube, 5-lobed, 10-ribbed, with stalked glandular hairs, persistent; tube tubular; lobes lanceolate, shorter than the tube. *Corolla* 5-lobed; tube slightly curved, funnel-shaped; lobes shorter than the tube, obovate. *Stamens* 4, almost equal, affixed about the middle of the corolla-tube; filaments linear, with membranous margins; anthers linear-oblong, 1-theous, dehiscing by an apical slit. *Ovary* ovoid, 2-chambered, with few ovules in each chamber; style terete, exserted; stigma simple. *Fruit* an oblique capsule, flattened laterally and grooved down each side. *Seed* subquadrate in outline; testa mucilaginous, swelling on wetting; embryo not completely filling the testa; cotyledons elliptic; radicle minute; endosperm none.

A shrub with rigid branches opposite one another and almost at right angles to the stem; stem and branches covered with stalked glandular hairs; leaves opposite, oblong or lanceolate, scabrid; flowers solitary, axillary, shortly pedicelled; bracts none.

A monotypic genus found in South West Africa and Angola. (Type: *H. angolensis* Sp. Moore)

NOTE.—Spencer Moore placed the genus in the family *Acanthaceae*; Clarke, in the *Flora Tropical Africa*, placed it doubtfully in the family *Acanthaceae*; de Della Torre and Harms placed it in the family *Scrophulariaceae*. While for the sake of uniformity I have retained the genus in the family *Scrophulariaceae*, on the character of the seed I consider it correctly placed in the family *Acanthaceae*.—E. P. P.

7616 **48. SOPUBIA** Buch.-Ham. ex D. Don, Prodr. Fl. Nepal, p. 88 (1825)

Calyx as long as the corolla-tube, 5-lobed, canescent or tomentose, persistent; tube campanulate; lobes longer or shorter than the tube, ovate, usually subacuminate. *Corolla* 5-lobed; tube subcampanulate; lobes elliptic, longer than the tube. *Stamens* 4, affixed in the throat of the corolla-tube, exerted; filaments linear; anthers cohering in pairs, 2-theous, with one theca linear and barren. *Ovary* subglobose or elliptic in outline, 2-chambered, with many ovules; placentas thick, plano-convex; style linear; stigma simple or subclavate. *Fruit* an ovoid or ellipsoid capsule, rounded or compressed at the apex, with loculicidal dehiscence. *Seeds* ellipsoid, subglobose or linear in outline (when linear then variously curved and bent), testa membranous, reticulated or ribbed; embryo straight; cotyledons oblong; radicle small, conical, not differentiated from the cotyledons.

Erect branched rigid herbs, usually turning dusky in drying, except the hoary-tomentose specimens; leaves alternate, opposite, or verticillate, narrow or cut into segments; inflorescence a raceme or spike, with the flowers solitary in the axils of bracts; bracts 2, close under the calyx.

Described species 48, mostly natives of Africa; 1 species recorded from Formosa and 1 species from Indo-China; 5 species recorded from South Africa extending from the Transvaal, Zululand, and Natal to the Knysna district. (Type: *S. trifida* Buch.-Ham.)

7622 **49. BUCHNERA** Linn., Sp. Pl., ed. 1, p. 630 (1753)

Calyx shorter than the corolla-tube, 4—5-toothed, ribbed, sometimes pilose or scabrid on the ribs; tube tubular; teeth shorter than the tube, ovate, subacuminate, usually scabrid on the margins. *Corolla* 5-lobed, sometimes pilose; tube cylindric, sometimes pilose in the mouth and/or throat; lobes shorter than the tube, obovate or spatulate, sometimes spatulate. *Stamens* 4, didymous, usually subsessile, affixed about the middle or low down in the corolla-tube, included; anthers 1-theous. *Ovary* elliptic in outline, 2-chambered, with numerous ovules; style terete, included; stigma terete or linear, almost as long as the style. *Fruit* a capsule, with loculicidal dehiscence. *Seeds* subellipsoid; testa membranous, reticulated; embryo straight; cotyledons elliptic; radicle stout, conical, not differentiated from the cotyledons.

Rather rigid herbs, somewhat scabrid, sometimes with a distinct tap-root, turning dusky in drying; leaves opposite or quasi-verticillate or the upper alternate; floral leaves reduced to bracts; inflorescence a spike, terminal; flowers sessile or subsessile, blue, purple, or white; bracts 2.

Described species 140, natives of Africa, North and South America, Madagascar, Australia, and the Malay Peninsula; 5 species in South Africa, extending from the Transvaal and Natal to the south-western districts. (Type: *B. americana* Linn.)

7623 **50. CYCNIUM** E. Mey., ex Benth. in Hook. Compan. Bot. Mag., vol. 1, p. 368 (1835)

Calyx much shorter than the corolla-tube or almost as long, 5-lobed (rarely 6-lobed), 10-veined or 10-ribbed, with glandular or stiff hairs on the ribs; tube tubular; lobes shorter than the tube, ovate, sometimes acuminate, sometimes scabrid on the inner face. *Corolla* 5-lobed, subbilabiate, glandular hairy; tube cylindric, sometimes with subclavate hairs in the upper part within; lobes much shorter than the tube, obovate. *Stamens* 4 (rarely 5), didymous, affixed about the middle of the corolla-tube, included; filaments linear, bearded above; anthers 1-theous. *Ovary* 2-chambered, with many

ovules; style terete, included; stigma linear-lanceolate, about as long as the style, sometimes 2-lobed. *Fruit* a capsule, ovoid or oval in outline or somewhat conical, acute or apiculate, with loculicidal dehiscence. *Seed* ovoid or oblong in outline, sometimes shaped like a top-boot; testa rugose.

Erect or prostrate herbs, sometimes stems from a stout rootstock, turning dusky when dry; leaves opposite or alternate, linear, lanceolate, or oblong-linear, entire or toothed; inflorescence a terminal raceme or flowers axillary; flowers sometimes large; bracts 2.

An African genus of 43 described species; 6 species described from South Africa and extending from the Transvaal, Swaziland, Zululand, Natal, to the Alexandria district and the Orange Free State; also recorded from the Kuruman district. (Type: *C. adonense* E. Mey. ex Benth.)

7624 51. RHAMPHICARPA Benth. in Hook. Compan. Bot. Mag., vol. 1, p. 368 (1835)

Calyx much shorter than the corolla-tube, 5-cleft or deeply 5-lobed, persistent; tube campanulate or tubular-campanulate; lobes longer than the tube, ovate or linear, sometimes long-acuminate. *Corolla* 5-lobed, sometimes glandular; tube cylindric; lobes elliptic or obovate. *Stamens* 4, didymous or nearly equal, affixed in the upper part of the corolla-tube, included; filaments linear, hairy at the base or bearded above; anthers 1-theous, cohering in pairs. *Ovary* subglobose or ovate in outline, 2-chambered, with many ovules; style linear, about as long as the corolla-tube or much shorter; stigma flattened and elliptic-lanceolate, or spindle-shaped. *Fruit* a usually beaked somewhat compressed capsule with loculicidal dehiscence, enclosed in the persistent calyx. *Seeds* ellipsoid; testa membranous, reticulated; embryo straight; cotyledons elliptic; radicle conical, not differentiated from the cotyledons; endosperm very scanty.

Erect or procumbent herbs, turning dusky in drying, probably half-parasitic; leaves opposite or the upper alternate, simple or pinnatisect; inflorescence a terminal raceme or flowers axillary.

Described species 33, mostly African, a few in Madagascar, India, and Australia; 4 species in South Africa extending from the Transvaal, Basutoland, Zululand, Natal, the Orange Free State to the George district; also recorded from Ngamiland. (Type: *R. tubulosa* Benth.)

7625 52. STRIGA Lour., Fl. Cochinch., p. 22 (1790)

Calyx usually shorter than the corolla-tube, more rarely almost as long, 5-lobed or cleft almost to the base, 5—15-ribbed, often scabrid, persistent; tube campanulate, tubular-campanulate or tubular, sometimes almost none; lobes sometimes unequal, shorter or longer than the tube, lanceolate or linear, sometimes with membranous margins. *Corolla* bilabiate, very rarely subbilabiate, usually glandular; tube cylindric, sometimes hairy within; posterior lobe entire, emarginate or bifid; anterior lobe trifid, usually longer than the posterior lobe. *Stamens* 4, didynamous, affixed in the upper part of the corolla-tube, included; filaments linear, sometimes shorter than the anthers; anthers 1-theous. *Ovary* ellipsoid or ovate in outline, 2-chambered, with many ovules; style linear or terete, included; stigma terminal, sometimes minutely 2-lobed. *Fruit* a more or less ellipsoid capsule, enclosed in the calyx. *Seeds* subglobose or ellipsoid; testa membranous, reticulated; embryo small, straight; cotyledons elliptic; radicle small, not differentiated from the cotyledons; endosperm scanty.

Parasitic or half-parasitic herbs; leaves opposite or the upper alternate, usually narrow, sessile or subsessile, sometimes all scale-like, usually scabrid; flowers solitary in the axils of the upper leaves or bracts.

Described species 47, distributed over the hotter parts of Africa, Asia, and Australia; 7 species in South Africa, fairly widely distributed but absent from the south-western districts. (Type: *S. lutea* Lour.)

7627

53. HARVEYA Hook., Icon. Pl., t. 118 (1837)

Calyx shorter than the corolla-tube, 5-lobed, sometimes subbilabiate, sometimes prominently 10-ribbed, pilose or glandular with stalked hairs, persistent; tube campanulate, sometimes pilose within; lobes usually longer than the tube, long-linear, lanceolate, or ovate. *Corolla* 5-lobed, usually glandular with stalked hairs, usually curved; tube globose at the base then constricted and long-campanulate above, or cylindric below and campanulate or funnel-shaped above, or tubular; lobes obovate, entire, wavy-cripsed or denticulate. *Stamens* 4, almost equal, affixed at different levels in the corolla-tube; filaments linear, sometimes pilose at the base; anthers 2-theous, with one theca usually half-moon-shaped, apiculate and fertile and the other subulate and barren. *Ovary* obovate, elliptic, or ovate in outline, 2-chambered with many ovules; style linear or terete, about as long as the corolla-tube, curved downwards above; stigma flattened and obovate or globose or clavate. *Fruit* a globose ovoid or conical somewhat compressed capsule with loculicidal dehiscence. *Seeds* more or less vase-shaped; testa membranous, reticulated; tegmen membranous, reticulated, lying with the enclosed embryo more or less loose within the testa; embryo small; cotyledons elliptic; radical not differentiated from the cotyledons; endosperm scanty.

Parasitic herbs, mostly turning black in drying; leaves scale-like, opposite or crowded, or the upper scattered; inflorescence a spike or raceme; flowers usually large, brightly coloured or white; bracts and bracteoles present.

Described species 42, mostly natives of Africa but a few recorded from the Mascarene Islands; 24 species found in South Africa, fairly generally distributed. (Type: *H. capensis* Hook.)

7629

54. HYOBANCHE Linn., Mant., vol. 2, p. 155 (1771)

Calyx shorter than the corolla-tube, 5-lobed, rarely split down one side and ciliate on the margins, usually longitudinally veined; lobes often much shorter than the tube, more or less lanceolate, usually with two pairs joined high up and one lobe almost free, sometimes pilose within and without, ciliate. *Corolla* 3-lobed, longitudinally veined, glabrous or densely pilose or villous; tube long-tubular or cylindric below and tubular above; lobes much shorter than the tube, with two of the lobes forming a hood and the third lobe small, the whole forming an oblique slit, sometimes scantily pilose within. *Stamens* 4, nearly equal, affixed near the base or at the middle of the corolla-tube, slightly exserted; filaments linear, pilose or villous at the base; anthers 1-theous. *Ovary* ovoid or subglobose, 2-chambered, with many ovules; style linear, slightly exserted; stigma thick and capitate. *Fruit* a subglobose fleshy capsule, at length deliquescent. *Seeds* numerous, minute, globose.

Short parasitic herbs, fleshy and somewhat woody at the base; leaves scale-like, scattered, ovate or elliptic, coloured; adpressed; inflorescence a terminal spike; flowers rather large, sessile or very shortly pedicelled; bracts and bracteoles present.

Endemic; species 7, extending from Namaqualand to the Mossel Bay district; also recorded from Natal and the Calvinia, Graaff-Reinet and the Somerset East districts. (Type: *H. sanguinea* Linn.)

7646

55. *BELLARDIA* All., Fl. pedem., vol. 1, p. 61 (1785)

Calyx almost as long as the corolla-tube, 4-lobed, glandular with stalked hairs, persistent; tube campanulate; lobes ovate. *Corolla* bilabiate, glandular; tube tubular, slightly curved; upper lip erect, hooded, entire; lower lip spreading, 3-lobed, with the middle lobe the smallest; palate bigibbous. *Stamens* 4, didymous, slightly exserted; lower pair affixed in the lower part of corolla-tube; upper pair affixed at the base of the upper corolla-lip; all lying in the concavity of the upper corolla-lip; anthers 2-theous, shortly mucronate, with clavate vibratile hairs. *Ovary* ovate, hirsute, 2-chambered, with many ovules; style linear, slightly exserted, hairy; stigma clavate. *Fruit* an ovoid somewhat compressed capsule, with loculicidal dehiscence, enclosed in the calyx. *Seeds* subglobose, very convex on one side, flattish on the other; testa membranous, longitudinally ribbed; embryo terete, oblong in outline; cotyledons ovate; radicle conical, not differentiated from the cotyledons.

Annual viscid herbs; leaves opposite, oblong, lanceolate, or linear, simple or incised; inflorescence a spike; bracts present.

Species 2, natives of southern Europe, the Orient, and Africa; 1 species recorded from South Africa, extending from Namaqualand, through the coastal districts to the Transkei; also recorded from the Somerset East, Murraysburg, and Molteno districts. (Type: *B. trixago* (L.) All.)

165. BIGNONIACEAE

Flowers bisexual, more or less irregular. *Calyx* gamosepalous, lobed, or spathaceous. *Corolla* gamopetalous; tube campanulate, funnel-shaped, or tubular, often pilose at the insertion of the stamens; limb bilabiate, more rarely regular; the 2-lobed posticous lip usually overlapping the 3-lobed anticus lip in bud. *Stamens* inserted in the corolla-tube and alternating with the lobes, didymous, usually 4, sometimes with a posticous staminode, or 5 and equal, very rarely stamens 2 with 3 staminodes; filaments filiform or flattened, slightly thickened and often hairy at the base; anthers 2-theous, attached at the apex, with the thecae parallel, divergent, or divaricate. *Disc* hypogynous, cushion-shaped, annular, or cupular or saucer-shaped, rarely absent. *Ovary* superior, 2-chambered or more rarely 1-chambered with 2 parietal placentas; ovules numerous, anatropous, in 2 to several rows on the placentas; style simple, filiform or more or less stout; stigmas of 2 flattened ovate or oblong lobes. *Fruit* a 2-valved loculicidal or septifragal capsule or fleshy and indehiscent. *Seeds* usually flat, with a broad hyaline wing, in genera with indehiscent fruits the testa sometimes woody; cotyledons often transversely oblong, sometimes folded, often with a depression or groove at the apex; endosperm 0.

Trees or shrubs, frequently twiners or climbers, very rarely herbs; leaves opposite, more rarely whorled or alternate, usually compound with articulated leaflets, often cirrhiferous; stipules absent but closely simulated in certain genera by the first or the first and second pairs of leaves of the axillary bud; inflorescence a panicle or raceme (simple or with cymose ultimate branching), terminal or axillary; flowers sometimes borne on the wood, often large, abundant, and brightly coloured.

Genera about 109; species about 700, mostly natives of tropical America.

1. Ovary 1-chambered; fruit indehiscent; seeds not winged

6. *Kigelia* DC.

- Ovary 2-chambered; fruit a capsule; seeds with hyaline wings 2

2. Capsule slightly compressed, covered with prickly warts
 4. *Catophractes* D. Don
 Capsule compressed, smooth 3
3. Calyx spathe-like, split down the posticous side
 5. *Markhamia* Seem.
 Calyx 5-toothed or -lobed 4
4. Stamens 5; ovules in 2 rows in each ovary-chamber
 3. *Rhigozum* Burch.
 Stamens 4; ovules in 4—8 rows in each ovary-chamber 5
5. Corolla-tube narrowly funnel-shaped; ovules in 4 series in each ovary-chamber 1. *Tecomeria* Spach
 Corolla-tube cylindric below, campanulate above; ovules in 7—8 series in each ovary-chamber 2. *Podranea* Sprague

7713 1. *TECOMERIA* Spach, Hist. Nat. Vég. Phanér., vol. 9, p. 137 (1840)

Calyx much shorter than the corolla-tube, 5-lobed, glabrous; tube tubular; lobes shorter than the tube, ovate, shortly acuminate. *Corolla* bilabiate; tube narrowly funnel-shaped, slightly curved, with papillae on the lower part within; one lip 2-lobed; all lobes elliptic, obtuse. *Stamens* 4, didymous, affixed in the lower part of the corolla-tube, exserted; filaments terete, with stalked glands on the lower portion; anthers 2-theous, linear-oblong, with the thecae at length separating. *Disc* thick, saucer-shaped. *Ovary* somewhat ellipsoid, 2-chambered, with many ovules in 4 series in each chamber; style terete, exserted; stigma elliptic, 2-lobed. *Fruit* a linear capsule, somewhat curved, compressed parallel to the septum.

Shrubs, erect or sometimes scandent; leaves opposite, petiolate, simply imparipinnate; leaflets mostly ovate, crenate; inflorescence a dense terminal raceme; flowers orange or scarlet in colour.

An African genus of 4 or 5 species; 1 species in South Africa extending from the north-eastern Transvaal, Swaziland, and Natal, through the coastal districts to the Alexandria district. (Type: *T. capensis* (Thunb.) Spach)

7716a 2. *PODRANEA* Sprague, Fl. Cap., vol. 4, sect. 2, p. 449 (1904)

Calyx shorter than the corolla-tube, 5-lobed; tube campanulate; lobes ovate, apiculate. *Corolla* slightly bilabiate; tube cylindric below, subcampanulate above, sparsely glandular within on the lower portion with stalked hairs; lobes shorter than the tube, obovate. *Stamens* 4, didymous, affixed at the junction of the cylindric and campanulate portion of the corolla-tube; filaments subterete, glandular with stalked glands on the basal portion; anthers 2-theous, elliptic, with the thecae at length separating. *Disc* thick, saucer-shaped, somewhat crenate. *Ovary* more or less ovate in outline, tapering into the style, 2-chambered, with many ovules in 7—8 series in each chamber; style semi-terete, slightly exserted; stigma of 2 flattened ovate lobes. *Fruit* an elongated capsule. *Seeds* winged; testa membranous; tegmen membranous; cotyledons transversely oblong, slightly concave above; radicle conical.

Shrubs and undershrubs, sometimes climbing; leaves petioled, opposite, imparipinnate; leaflets elliptic-ovate, entire or remotely toothed; inflorescence a terminal panicle; flowers large, pink or lilac in colour.

An African genus of 2 species; 1 species in South Africa, recorded from Pondo-land. (Type: *P. ricasoliana* Sprague)

7722 3. RHIGOZUM Burch., Trav. in South. Afr., vol. 1, p. 299 (1822)

Calyx shorter than the corolla-tube, 5-toothed, not or markedly many-ribbed, pubescent or pilose, or tomentose with stellate hairs, or subglabrous; tube campanulate; teeth small. *Corolla* 5-lobed; tube narrow below, becoming campanulate above, scantily pilose within on the lower part and sometimes also in the throat; lobes obovate. *Stamens* 5, affixed at the base of the campanulate portion of the corolla-tube, slightly exserted; filaments terete, pilose at the base; anthers 2-theous, oblong, with the thecae separating at the base only. *Disc* thick, shallowly saucer-shaped. *Ovary* ovoid, 2-chambered, with many ovules in 2 rows in each chamber, sometimes glandular; style terete, slightly exserted; stigma of 2 ovate somewhat fleshy lobes. *Fruit* an oblong or elliptic-oblong shortly beaked capsule. *Seeds* winged.

Shrubs, sometimes with ternate branches, sometimes spiny; leaves simple or trifoliate or pinnate, solitary or fascicled on small cushions; flowers fascicled on cushions.

An African genus of 7 species; 4 species occur in South Africa, found in Bechuanaland, Griqualand West, the north-western and central districts and extend to near Grahamstown. (Type: *R. trichotomum* Burch.)

7723 4. CATOPHRACTES D. Don in Proc. Linn. Soc., vol. 1, p. 4 (1839)

Calyx shorter than the corolla-tube, shortly 5-lobed, 5-ribbed, shortly split down one side, densely pilose; tube tubular; lobes shorter than the tube, linear. *Corolla* subbilabiate, 5- (more rarely 6—7-) lobed; tube long-cylindric, becoming campanulate above, many ribbed, pilose within on the lower part; lobes suborbicular. *Stamens* as many as the corolla-lobes, affixed at the base of the campanulate part of the corolla-tube, slightly exserted; filaments terete; anthers 2-theous, bluntly apiculate, with the thecae separating at the base. *Disc* thick, saucer-shaped, somewhat crenate. *Ovary* subglobose, 2-chambered, with few ovules in 2 rows in each chamber, covered with thick papillae; style filiform, exserted; stigma of 2 elliptic-oblong lobes. *Fruit* an elliptic or elliptic-oblong capsule slightly compressed parallel to the septum; valves boat-shaped, woody, sharply warted. *Seeds* winged, long pilose; testa somewhat leathery; tegmen leathery; cotyledons transversely oblong, concave at the apex; radicle conical.

An erect spiny shrub branched from the base; leaves simple, fascicled, petioled, tomentose; flower lateral, fascicled, large.

An African genus of 2 species found in South-West Africa, Namaqualand, and the northern Transvaal; 1 of the species also recorded from tropical Africa. (Type: *C. alexandria* D. Don)

7744 5. MARKHAMIA Seem. in Journ. Bot., vol. 1, p. 226 (1865)

Calyx shorter than the corolla-tube, opening late in bud, spathaceous, split down the posticous side, boat-shaped in outline, more or less cuspidate uncinat at the apex, more or less coriaceous, sometimes glandular. *Corolla* bilabiate or subbilabiate, 5-lobed, funnel-shaped, or cylindric at the base and campanulate above; lobes shorter than the tube, obovate, glandular on the inner face. *Stamens* 4 (sometimes a fifth staminode present), didymous, included; filaments terete, sometimes glandular and thickened at the base; anthers 2-theous, sometimes bluntly apiculate, with the thecae widely separating. *Disc* cupular, crenate. *Ovary* oblong in outline, passing into the style, 2-chambered, with many ovules in 4—6 rows in each chamber; style terete, included; stigma of 2 obovate lobes. *Fruit* a long-linear capsule, sometimes over 1 ft. long; valves flat or nearly so. *Seeds* winged at each

end; testa somewhat coriaceous; tegmen membranous; cotyledons transversely oblong, with a deep groove at the apex; radicle conical.

Trees or shrubs; leaves opposite, petioled, imparipinnate; inflorescence a terminal or lateral panicle or raceme.

Described species 13, mainly African; 3 species found in Asia, 1 species in South Africa, found in the northern Transvaal and Bechuanaland. (Type: *M. stipulata* (Wall.) Seem.)

7761 6. *KIGELIA* DC. in Bibl. Univ. Genève, vol. 17, p. 135 (1838)

Calyx shorter than the corolla-tube, 2—5-lobed, opening late in bud, 5-ribbed, leathery; tube campanulate; lobes shorter than the tube, sometimes apiculate. *Corolla* bilabiate; tube slightly curved, tubular below, campanulate above, leathery, glabrous; upper lip shortly 2-lobed, erect; lower lip 3-lobed, deflexed; all lobes more or less obovate. *Stamens* 4, didymous (a staminode present), inserted low down in the corolla-tube, subexserted; filaments thick, linear, leathery, pilose at the base; anthers 2-theous, with the thecae separating and sometimes with an apical fleshy bilobed appendage. *Disc* 5-lobed, thick, leathery, tomentose. *Ovary* 1-chambered, with 2 parietal much intruded placentas and numerous ovules in many rows; style subterete, subexserted; stigma of 2 large elliptic lobes. *Fruit* roughly cylindric, sometimes over 1 ft. long, indehiscent; pericarp thick, enclosing a fibrous pulp in which the seeds are embedded. *Seeds* thick, wingless; testa woody, intruded between the cotyledons; cotyledons folded, elliptic or plano-convex in outline; radicle thick, terete.

Trees; leaves petioled, imparipinnate; leaflets large, elliptic; inflorescence a long-peduncled pendulous lax panicle; flowers large, orange or red in colour.

An African genus of 18 described species; 1 species in South Africa recorded from the northern Transvaal, Swaziland, Zululand, and Natal. (Type: *K. pinnata* (Jacq.) DC.)

166. PEDALIACEAE

Flowers bisexual, zygomorphic. *Calyx* divided nearly to the base into 5 or 4 segments. *Corolla* gamopetalous; tube obliquely funnel-shaped or cylindric, often gibbous, saccate, or spurred at the base, sometimes with a ring of villous hairs within; limb obscurely 2-lipped; lobes 5, subequal or unequal. *Stamens* 4, more or less distinctly didymous, often with the rudiment of a fifth stamen present, very rarely 2 fertile stamens and 2 staminodes, inserted in the corolla-tube and alternating with the corolla-lobes, rarely exserted; anthers 2-theous, with the thecae hanging from the apex of the connective and often somewhat divergent, or dorsally attached to the connective and parallel; connective nearly always with an apical gland. *Disc* always more or less developed, annular or one-sided. *Ovary* superior, very rarely inferior, sessile, 2—4-chambered; chambers often completely or incompletely divided by spurious septa; ovule 1 or ovules more than 1 in each chamber; style linear or terete, slightly exceeding the anthers; stigma 2-lobed. *Fruit* very variable, dehiscent or indehiscent, often provided with spines or wings. *Seeds* 2 to many in each loculus, often winged; cotyledons oblong or elliptic; radicle short and blunt; endosperm scanty.

Annual or perennial herbs, rarely shrubs or small trees, sometimes spiny; leaves opposite or the upper alternate, simple, variously divided; stipules 0; inflorescence rarely a raceme, usually the flowers axillary and solitary; pedicels usually with nectarial glands at the base.

Genera about 15, with close on 100 species, distributed in the tropics and extra-tropical countries of the southern hemisphere of the Old World.

1. Fruit with 4 longitudinal wings; ovary 2-chambered with 1—2 ovules in each chamber, if more than 2 ovules then corolla-tube produced into a large sac below 2
 Fruit not as above; ovary 2-chambered or spuriously 4-chambered, with few to many ovules; corolla-tube sometimes gibbous at the base or produced into a spur 3
2. Corolla-tube with a large basal sac... 3. *Holubia* Oliv.
 Corolla-tube somewhat gibbous at the base but not conspicuously saccate 1. *Pterodiscus* Hook.
3. Fruit armed along the edges with horny arms bearing recurved spines or with spiny margins and a few protuberances on the face 2. *Harpagophytum* DC.
 Fruit not as above 4
4. Trees or shrubs with spiny branches 5
 Herbaceous plant; branches not spiny 6
5. Corolla-tube produced at the back into a long slender spur 4. *Sesamothamnus* Welw.
 Corolla-tube not produced into a spur 5. *Sigmatosiphon* Engl.
6. Fruit vertically compressed, convex on the under surface and with 2 conical spines on the upper surface ... 9. *Pretrea* J. Gay
 Fruit not vertically compressed, beaked or horned at the apex ... 7
7. Fruit armed with 2—8 conic spines or tubercles and beaked at the apex; stamens affixed in the uppermost third of the corolla-tube 6. *Rogeria* J. Gay
 Fruit beaked or 2-horned at the apex; stamens affixed near the base of the corolla-tube... .. 8
8. Fruit 2-horned at the apex; corolla-tube gibbous at the base 8. *Ceratotheca* Endl.
 Fruit beaked; corolla-tube not distinctly gibbous at the base 7. *Sesamum* Linn.

7769 1. PTERODISCUS Hook., Bot. Mag., t. 4117 (1844)

Calyx much shorter than the corolla-tube, 5-partite almost to the base; segments sometimes unequal, ovate, acuminate. *Corolla* subbilabiate, sometimes densely glandular without; tube funnel-shaped, sometimes constricted above and then widened, often oblique or slightly gibbous at the base; lobes 5, orbicular, subequal. *Stamens* 4, didymous, inserted near the base of the corolla-tube, included, sometimes (always?) a staminode present; filaments linear, glandular-villous at the base; anthers 2-theous, with the thecae diverging, with a minute apiculus. *Disc* not very prominent. *Ovary* 2-chambered, with 1 or 2 ovules in each chamber, or 10 to 12 ovules in 2 series; style linear, included; stigma of 2 ovate lobes with fimbriated margins. *Fruit* indehiscent, laterally compressed, with 4 longitudinal wings, unarmed; pericarp spongy, with large cavities between the wings. *Seeds* 1—2 in each loculus; testa finely honeycombed; tegmen membranous; cotyledons thick, elliptic; radicle small, blunt; endosperm scanty.

Perennial succulent herbs, usually from a large tuber; leaves opposite or alternate, coarsely toothed to pinnate-lacinate, rarely subentire, sometimes glandular beneath; flowers solitary, shortly pedicelled in the axils of the leaves, usually yellow or purple in colour.

An African genus of 18 described species; 4 species found in South Africa, recorded from South West Africa, Bechuanaland, the north-western districts of

the Cape Province, the Transvaal, Swaziland, and the Orange Free State. (Type: *P. speciosus* Hook.)

7771 2. HARPAGOPHYTUM DC., ex Meissn. Gen., p. 298 (1840)

Calyx much shorter than the corolla-tube, 5-partite almost to the base; segments sometimes unequal, linear from a broadened base or ovate-lanceolate, usually acuminate, glandular-hairy. *Corolla* 5-lobed, sometimes bilabiate; one lip 2-cleft; other lip 3-lobed; tube usually oblique and gibbous at the base, usually constricted at the base then becoming funnel-shaped or broadly tubular, usually glandular-hairy; lobes obovate. *Stamens* 4, didymous or nearly equal, affixed near the base of the corolla-tube, included; staminode 1; anthers 2-theccous, with the thecae separating, with a fleshy apiculus. *Disc* not prominent. *Ovary* more or less ovoid or elliptic in outline, sometimes covered with nodules, 2-chambered with many ovules in each chamber, glandular-hairy or densely villous; style terete, included; stigma of 2 ovate membranous lobes. *Fruit* a tardily dehiscent 2-locular capsule, flattened at right angles to the septum, armed along the edges with 2 rows of horny arms bearing recurved spines or with spiny margins and a few protuberances on the face. *Seed* irregularly angled; testa black, honey-combed; tegmen membranous; embryo ellipsoid; cotyledons oblong, thick; radicle small, blunt, not differentiated from the cotyledons; endosperm scanty.

Perennial herbs with the stems arising from a thick woody rootstock and trailing; leaves opposite or alternate, shortly petioled, variously cut or lobed, usually paler beneath due to the presence of white glands; flowers solitary, axillary, pedicelled.

Described species 9, found in Africa and Madagascar; 3 or 4 species in South Africa, recorded from South West Africa, the north-western districts of the Cape Province, Griqualand West, Basutoland, the Transvaal, and the Orange Free State. (Type: *H. procumbens* (Burch.) DC.)

7772 3. HOLUBIA Oliv. in Hook. Icon. Pl., t. 1475 (1884)

Calyx much shorter than the corolla-tube, 5-partite almost to the base; segments lanceolate, acuminate, glandular. *Corolla* 5-lobed, minutely glandular; tube expanded into a large flattened sac below and tubular above; lobes transversely oblong. *Stamens* 4, didymous, affixed to about the middle of the corolla-tube, included; filaments terete, glandular-villous at the base; anthers 2-theccous, with the thecae diverging, with an apical appendage. *Disc* thick, cushion-like, somewhat expanded on one side. *Ovary* 4-angled, 2-chambered, with about 8 ovules in each chamber, glandular; style terete, scarcely exerted; stigmas of 2 ovate flat lobes, somewhat crenate on the margins. *Fruit* 4-winged, conspicuously reticulately veined. *Seed* flattened, semi-orbicular; testa with a narrow marginal wing, with irregular ridges, honeycombed; tegmen thin, membranous; cotyledons thick, elliptic; radicle conical; endosperm scanty.

An annual herb, with succulent minutely glandular stems; leaves opposite, petioled, ovate, prominently digitately veined; flowers solitary in the axils of the leaves, pale sulphur-yellow in colour.

Endemic; species 1, recorded from the Transvaal. (Type: *H. saccata* Oliv.)

7774 4. SESAMOTHAMNUS Welw., in Trans. Linn. Soc., vol. 27, p. 49, t. 18 (1869)

Calyx much shorter than the corolla-tube, 5-partite almost to the base, oblique; segments ovate or ovate-triangular, acute, sometimes unequal.

Corolla 5-lobed, subbilabiate; tube very long, cylindric; gently curved, with the back produced at the base into an often long slender spur; lobes elliptic, suborbicular, subequal. *Stamens* 4, almost equal, affixed in the throat of the corolla-tube, included; filaments broadly linear, shorter than the anthers; anthers 2-theous, with the thecae parallel. *Disc* fused with the base of the ovary, oblique and posticously gibbous. *Ovary* 2-chambered, with the chambers divided nearly to the apex by a spurious septum, with many ovules in 1 series in each chamber; style long-linear, exserted; stigma of 2 membranous ovate lobes. *Fruit* an elliptic or oblong rigid compressed capsule, loculicidal from the apex to the base. *Seeds* compressed, obovate, with a broad hyaline marginal wing; testa subleathery; tegmen thin, membranous; cotyledons elliptic, with a groove above; radicle conical, distinct from the cotyledons.

Shrubs with a short or large swollen bole from which spring numerous erect stiff grey branches, or a small tree, armed with spreading spines; leaves in fascicles on arrested branchlets in the axils of the spines, deciduous; flowers in terminal and subterminal few-flowered short racemes, white or pale pink in colour.

An African genus of 7 described species; 2 species found in South Africa, recorded from the northern Transvaal and the Kalahari. (Type: *S. benguelensis* Welw.)

7775 5. SIGMATOSIPHON Engl., in Engl. Bot. Jahrb., vol. 19, p. 150 (1894)

Calyx very much shorter than the corolla-tube, 5-partite; tube very shallowly saucer-shaped; lobes ovate, somewhat unequal. *Corolla* 5-lobed, subbilabiate, densely scurfy in bud; tube long-cylindric, slightly curved, pilose within on the lower portion; lobes ovate. *Stamens* 4, subdidymous, affixed about the middle of the corolla-tube, slightly exserted, with a linear staminode affixed near the base of the corolla-tube; filaments thick, subterete; anthers 2-theous, with the thecae parallel. *Disc* thick and fleshy, attached to the base of the ovary. *Ovary* ellipsoid, covered with black glands, falsely 4-chambered, with several ovules in 1 row in each false chamber; style terete-filiform; slightly exserted; stigma of 2 somewhat fleshy lobes. *Fruit* not seen.

Shrubs with a short trunk and long spinous branches; leaves fascicled on arrested branchlets in the axils of the spines, deciduous; inflorescence a terminal raceme; flowers large, yellow in colour.

Endemic; species 1, recorded from South West Africa. (Type: *S. gurichii* Engl.)

7776 6. ROGERIA J. Gay in Ann. Sc. Nat., vol. 1, p. 457 (1824)

Calyx very small, many times shorter than the corolla-tube, 5-partite, persistent and becoming hard and spiny in fruit; tube shallowly saucer-shaped; lobes ovate or lanceolate, often unequal. *Corolla* 5-lobed, subbilabiate; tube saccate at the base, then cylindric and becoming campanulate above; lobes obovate. *Stamens* 4, subequal or didymous, affixed in the uppermost third of the corolla-tube, slightly exserted; filaments broadly linear, pilose at the base; anthers 2-theous, with the thecae at length separating. *Disc* very shallow, adnate to the base of the ovary. *Ovary* ovoid, spuriously 4-chambered, with many ovules in about 4 series in each of the anticonous chambers and few ovules in 1 series in the posticonous chambers; style terete, slightly exserted; stigma of 2 unequal lanceolate lobes. *Fruit* an obliquely ovoid capsule armed with 2—8 conic spines or tubercles and rostrate at the apex, with the anterior loculus dehiscing tardily loculicidally to the middle and the posticonous loculus indehiscent. *Seed* obovate in general outline;

testa black with a narrow marginal honeycombed wing, with much larger honeycombed pits on each face; tegmen thin, membranous; cotyledons obovate-elliptic; radicle conical, blunt; endosperm scanty, oily.

Erect annual succulent herbs; leaves opposite, petioled with a broad ovate digitately veined lamina which is mealy-glandular beneath; inflorescence a 1 to few-flowered axillary cyme; flowers violet or white in colour.

An African genus of 6 species; 1 species recorded from Brazil; 4 species in South West Africa and Namaqualand. (Type: *R. longiflora* J. Gay)

7777

7. SESAMUM Linn., Sp. Pl., ed. 1, p. 634 (1753)

Calyx much shorter than the corolla-tube, 5-partite, usually suboblique, often hairy; segments linear or lanceolate-linear, usually acuminate. *Corolla* 5-lobed, subbilabiate, with the limb more or less oblique, often hairy without; tube campanulate, shortly tubular at the base, sometimes with a villous ring near the base within; lobes obovate, with the lowest lobe distinctly longer than the others. *Stamens* 4, subdidymous, affixed near the base of the corolla-tube, included; filaments terete, usually glandular-pilose at the base; anthers 2-theous, oblong, with the thecae parallel and with a small apical gland. *Disc* annular, sometimes not evident. *Ovary* often oblong in outline, spuriously 4-chambered, with many ovules in 1 series in each chamber, often hairy; style terete, included; stigmas of 2 obovate or lanceolate-ovate membranous lobes. *Fruit* a capsule, oblong in outline, slightly compressed at right angles to the septum, loculicidal towards the base, more or less beaked. *Seed* sometimes 4-angled, with acute margins or winged at one or both ends, with the faces smooth or rugose and muriculate-foveolate; testa subcoriaceous; tegmen hyaline; cotyledons elliptic; radicle conical, blunt; endosperm scanty, oily.

Annual or perennial erect or procumbent glabrous or hairy herbs; leaves polymorphic, petioled or sessile, simple or compound; flowers solitary in the axils of the leaves, pale pink to deep purple in colour.

Described species 37, found in Africa and the Mascarene Islands, extending to the south of Europe and through the Orient to India, China, and Japan; 11 species described from South Africa, and mostly recorded from South West Africa, but also found in the Transvaal, Natal, Griqualand West, and in some of the north-eastern and central districts. (Type: *S. indicum* Linn.)

7778

8. CERATOTHECA Endl. in Linnaea, vol. 7, p. 5, t. 1.2 (1823)

Calyx much smaller than the corolla-tube, 5-partite, suboblique, glandular-pilose. *Corolla* 5-lobed, subbilabiate, with an oblique limb, glandular-pilose; tube campanulate above, constricted, curved and gibbous at the base, with a band of deflexed villous hairs within at the constriction; lobes ovate, with the lowest lobe the longest. *Stamens* 4, subdidymous, with a small fifth 2-lipped staminode, affixed at the constriction of the corolla-tube, included; filaments linear, anthers 2-theous, oblong-linear, with the thecae parallel. *Disc* annular, equal. *Ovary* spuriously 4-chambered, with several ovules in 1 series in each chamber, bluntly 2-horned at the apex, glandular-villous; style subterete; stigma of 2 lanceolate lobes. *Fruit* a capsule compressed at right angles to the septum, 2-horned at the apex. *Seed* compressed, obovate, with a shallow groove round the edges; testa black, with ridges on both faces; cotyledons elliptic, lobed at the base; radicle conical, blunt, differentiated from the cotyledons.

Annual erect or procumbent herbs; leaves opposite, petioled, dentate or crenate; flowers solitary in the axils of the leaves, on short pedicels, rose, lilac, or yellow in colour.

An African genus of 8 described species; 1 species in South Africa recorded from the Transvaal, Zululand, Natal, Pondoland, and the East London district. (Type: *C. sesamoides* Endl.)

7780 **9. PRETREA** J. Gay in Ann. Sc. Nat., vol. 1, p. 457 (1824) *

Calyx much shorter than the corolla-tube, 5-partite to the base, somewhat oblique, hairy; segments linear-lanceolate or ovate-lanceolate. *Corolla* 5-lobed, subbilabiate, pilose; tube constricted near base and somewhat saccate, then campanulate, with a ring of dense deflexed hairs within at the constricted part; lobes obovate. *Stamens* 4, subdidymous, affixed at the constricted part of the corolla-tube, included; filaments linear; anthers 2-theous, with the thecae parallel. *Disc* annular. *Ovary* spuriously 4-chambered, with 2 ovules in each chamber; style somewhat compressed, linear, included; stigmas of 2 ovate lobes. *Fruit* indehiscent, very hard, convex on the lower face, with a mound and ridges and 2 conical spines on the upper face, and with a hard narrow wing. *Seed* obovate, compressed, with a groove on the side edges; testa somewhat crustaceous, almost smooth, yellowish in colour; tegmen hyaline; cotyledons oblong; radicle conical, scarcely differentiated from the cotyledons; endosperm scanty.

Perennial trailing herbs with a deep tap-root; leaves opposite, petioled, crenate, deeply sinuate-dentate to laciniate, mealy-white on the under surface; flowers solitary, axillary, pedicelled, rose to crimson in colour.

Species 1, found in tropical and South Africa; recorded from South West Africa, Bechuanaland, and the Transvaal. (Type: *P. zanguebarica* J. Gay)

167. MARTYNIACEAE

Flowers bisexual, zygomorphic. *Calyx* 5-fid or 5-partite, slit in front. *Corolla* gamopetalous; tube campanulate or long-cylindric, scarcely gibbous; limb slightly 2-lipped; lobes 5, slightly unequal. *Stamens* 2 or 4, inserted near the base of the corolla-tube, included; staminodes 1 or 3; filaments linear; anthers 2-theous, with the thecae separating. *Disc* regular, sometimes not very conspicuous. *Ovary* 1-chambered, with several ovules on two 2-cleft placentas; style terete, included or slightly exserted; stigma 2-lobed. *Fruit* ending in 2 long or short horns, opening loculicidally at the apex; exocarp hard. *Seed* with thin endosperm.

Erect hairy herbs; leaves opposite or alternate, petioled, cordate at the base, deeply sinuate-toothed or palmately lobed; inflorescence a short terminal raceme; flowers large; bracts small or 0; bracteoles at base of calyx 2, glandular.

Genera 3; species about 12, all American.

NOTE.—There appears to be some doubt as to the validity of the family and some authors, e.g. Hutchinson in *Families of Flowering Plants*, place the genera in the family Pedaliaceae.—E. P. F.

7785 **PROBOSCIDEA** Moench, Meth., p. 466 (1784)

Calyx subequalling the corolla-tube, 5—7-partite, split in front, glandular-pilose; lobes unequal, oblong, elliptic, or obovate. *Corolla* 5-lobed, subbilabiate, glandular-pubescent; tube cylindric at the base, then campanulate; lobes somewhat unequal. *Stamens* 4, subdidymous, affixed at the constricted part of the corolla-tube, included; filaments linear; anthers 2-theous, oblong, with the thecae separating, without an apical gland. *Disc* not very conspicuous. *Ovary* ellipsoid, 1-chambered, with many ovules on two 2-cleft parietal placentas; style terete, included; stigma of 2 slightly unequal obovate lobes. *Fruit* ending in 2 long curved horns, opening loculicidally at the apex; exocarp leathery; endocarp hard. *Seed* oblong in outline, finely

ridged and tuberculed; testa leathery; cotyledons elliptic, shortly eared at the base; radicle short, blunt; endosperm scanty.

An erect herb; leaves opposite, long petioled; lamina usually large, cordate at the base, digitately veined, subentire; inflorescence a terminal raceme; flowers often dull yellow in colour.

Species about 6, all American; 1 species naturalized in South Africa.

NOTE.—O. Stapf in Engler and Prantl, *Pflanzenfamilien*, upheld the genus *Proboscidea* on the grounds that 4 fertile stamens are present, while only 2 fertile stamens are present in *Martynia*. Some later authors recognize the genus *Martynia*, though the *Index Kewensis*, p. 194 (1926—30), retains the genus *Proboscidea*. I have followed Stapf and have placed the species (*P. lutea* (Lindl.) Stapf) naturalized in South Africa in the genus *Proboscidea*.—E. P. P.

168. OROBANCHACEAE

Flowers bisexual, irregular. *Calyx* gamosepalous, with 2—5 lobes or teeth or divided into 2 lateral segments; lobes open or valvate in bud. *Corolla* gamopetalous; more or less bilabiate; tube funnel-shaped, tubular, or cylindric below, usually subcampanulate above; lobes imbricate, with the two back ones interior. *Stamens* 4, didymous, affixed below the middle of the corolla-tube, alternating with 4 of the corolla-lobes; filaments often thickened or flattened towards the base; anthers 2-theous, rarely one theca barren and subulate-acuminate or broadly club-shaped. *Disc* obscure or rarely produced in the fruit into an ovoid or broad and short gland. *Ovary* superior, 1-chambered; carpels 2 or abnormally 3, placed back and front; placentas 4, parietal, covered almost all over with numerous anatropous ovules; style usually included; stigma bilobed, papillose above. *Fruit* a 1-locular capsule, dehiscing by 2 placentiferous valves. *Seeds* numerous, often minute, usually subglobose, foveolate-reticular or striate-rugose; embryo often minute, globose.

Parasitic herbs, with stems usually thickened at the base and covered with imbricate scales; leaves reduced to scales, alternate, with the upper bract-like; flowers solitary in the axils of the bract-like scales, sessile or pedicellate, few or crowded in dense terminal spikes; bracts 2.

Genera about 12, with about 200 species, natives of Europe, North America, extra-tropical Asia, and North Africa.

7791 OROBANCHE Linn., Sp. Pl., ed. 1, p. 632 (1753)

Calyx shorter than the corolla-tube, equally or unequally 2—5-toothed or 3—5-fid, or divided to the base at the back and front, with the lateral segments unequally bifid or rarely entire, a fifth smaller lobe being rarely added at the back; all the lobes or segments acuminate. *Corolla* more or less distinctly bilabiate, often glandular with stalked glands; tube funnel-shaped or tubular below and campanulate above; upper lip bipartite, bifid, emarginate, or entire; lower lip 3-lobed; lobes separated by prominent folds. *Stamens* 4, didymous, affixed low down in the corolla-tube, included, usually surrounded by a gland above the point of attachment; filaments usually thickened or flattened towards the base; anthers 2-theous, with the thecae parallel and pointed. *Disc* not evident. *Ovary* 1-chambered, with numerous ovules on 4 parietal placentas; style thickish and flattish, included; stigma of 2 fleshy lobes. *Fruit* a capsule, dehiscing in the median plane. *Seeds* minute, globose; testa membranous, reticulated; embryo minute, globose; endosperm scanty.

Parasitic plants, usually more or less covered with gland-tipped papillose hairs; stems succulent, simple or branched; leaves much reduced so that plants appear leafless; inflorescence a spike or raceme; bracts present; bracteoles present or absent.

Described species 163, widely dispersed in the north temperate regions; 4 species described from Africa; 1 species found in the south-western districts of the Cape Province (introduced from Europe); 1 species described from South West Africa. (Type: *O. major* Linn.)

169. GESNERIACEAE

Flowers bisexual, irregular or rarely regular. *Calyx* often gamosepalous, partly or quite adnate to the ovary, 5- (rarely 4-) toothed, -lobed, or -partite, with open valvate or rarely imbricate aestivation, very rarely divided quite to the base. *Corolla* gamopetalous; tube various; limb oblique or rarely subequal, often more or less 2-lipped; lobes 5, rarely 4, often imbricate, with the two posterior lobes interior or rarely exterior. *Stamens* 4 or 2, fixed to the base of the corolla or inserted on the tube, rarely some reduced to staminodes; anthers 2-theous, variously conniving, or connate, or rarely free, with the thecae parallel, diverging or divaricate, distinct or confluent at the apex. *Disc* hypogynous or perigynous, various. *Ovary* inferior, semi-inferior, or superior, 1-chambered, sometimes imperfectly 2- or 4-chambered, with numerous ovules; style simple; stigma dilated, capitate or shortly 2-lobed. *Fruit* a capsule or rarely fleshy, crowned with the calyx-lobes, or included in the calyx, with loculicidal dehiscence or dehiscing variously. *Seeds* numerous, small, with or without endosperm.

Herbs or shrubs, rarely trees; stems in the herbaceous forms short, simple, slightly branched or almost none; in shrubby or tree forms the stems erect, scandent, or creeping; leaves opposite, sometimes alternate, radical or grouped at the end of short branches; stipules none; inflorescence various; bracts small or rarely foliaceous; bracteoles rarely present on the pedicels.

Over 700 genera, with between 700 and 800 species widely distributed.

- | | | | |
|--|-----|-----|--------------------------------|
| Stamens 2; ovary 1-chambered | ... | ... | 1. <i>Streptocarpus</i> Lindl. |
| Stamens 5 or 4 with a staminode; ovary 2-chambered | | | 2. <i>Chararophila</i> Marl. |

7823

1. STREPTOCARPUS Lindl., Bot. Reg., t. 1173 (1828)

Calyx shorter than the corolla-tube, 5-lobed or 5-partite to the base or nearly to the base, hairy and/or glandular; tube campanulate; lobes shorter than the tube, linear, lanceolate, or ovate, sometimes acuminate, sometimes obtuse. *Corolla* 5-lobed, often bilabiate, sometimes the 3-lobed lip much the longer; tube cylindric, campanulate, tubular or cylindric below and subcampanulate above, sometimes gibbous at the base, usually glandular-pilose; lobes obovate. *Stamens* 2, affixed at various depths in the corolla-tube, included or exserted, sometimes 1 to 3 staminodes present; filaments linear or linear-filiform, sometimes with membranous margins; anthers 2-theous, usually cohering, with the thecae separating. *Disc* annular. *Ovary* usually terete and linear in outline, rarely ovate in outline, 1-chambered, with the placentas much intruded and bearing many ovules, hairy or densely glandular in the South African species; style terete, sometimes glandular, included or exserted; stigma 2-lobed or capitate, sometimes subsessile. *Fruit* a long-linear capsule, splitting into 2 spirally twisted valves which separate from the placentas. *Seeds* small, ellipsoid or oblong in outline, pointed at each end; testa sometimes reticulate, brown; embryo linear in outline; cotyledons elliptic; radicle terete, longer than the cotyledons.

Herbaceous plants, at least in all the South African species, usually nearly or quite stemless, with many-celled hairs which are often gland-tipped; inflorescence a pedunculate cyme or rarely only 2-flowered; bracts small or 0.

About 100 species described, besides many horticultural hybrids, confined to Africa south of the Tropic of Cancer and the Mascarine Islands; 28 species found in South Africa, extending from the Transvaal, Zululand, Natal, the eastern Orange Free State, and the coastal districts, as far as south of Knysna. (Type: *S. rexii* (Bowie) Lindl.)

7893 2. CHARADROPHILA Marl., in Engl. Bot. Jahrb., vol. 26, p. 358, t. 8 (1899)

Calyx shorter than the corolla-tube, 5-lobed, pilose from bulbous-based hairs; tube shallowly campanulate; lobes longer than the tube, oblong, slightly unequal. *Corolla* bilabiate; tube campanulate, pilose within; posterior lip bilobed; anterior lip trilobed; lobes all obovate. *Stamens* 5, or stamens 4 with a rudimentary fifth stamen, inserted at the base of the corolla-tube, included; filaments terete, slightly thickened and bent at the base; anthers 2-theous. *Ovary* ovate in outline, 2-chambered, with many ovules, villous; style linear, scarcely exerted; stigma subglobose. *Fruit* an ovoid somewhat compressed apiculate or acuminate capsule, dehiscing both septicidally or loculicidally. *Seeds* rather numerous, ovoid, rugose, black.

A branched or subcaulescent herb, leaves radical, opposite, petioled, with an elliptic crenate pubescent lamina; inflorescence a centripetal pseudo-cyme; flowers on long pedicels.

Endemic; species 1, recorded from Jonkers Hoek near Stellenbosch. (Type: *C. capensis* Marl.)

NOTE.—Marloth notes that the habit and leaves suggest the family *Gesneriaceae* but that the fruit is typical of *Scrophulariaceae*. Engler considers it should be placed in *Gesneriaceae*.—E. P. P.

170. LENTIBULARIACEAE

Flowers bisexual, zygomorphic. *Calyx* deeply 2—5-partite, regular or more or less 2-lipped, or the sepals free to the base. *Corolla* gamopetalous, 2-lipped, spurred, rarely saccate; tube very short; upper lip interior, entire or 2-lobed; lower lip entire or 2—3-lobed, usually with a vaulted more or less gibbous palate. *Stamens* 2, antious, attached to the base of the corolla; filaments asymmetrically thickened; anthers 2-theous, with diverging thecae. *Ovary* superior, 1-chambered, with numerous sessile and closely packed ovules, rarely ovules few or only 2; style simple; stigma more or less distinctly 2-lipped, with the upper lip usually very small and obscure. *Fruit* a 1-locular few- to many-seeded capsule, dehiscing irregularly, or by 2—4 valves, or circumscissile, very rarely 1-seeded and indehiscent. *Seeds* very small, without endosperm.

Perennial, rarely annual, herbs, aquatic or terrestrial (but always in wet places), with usually utricular contrivances; leaves rosulate or scattered on stolons, entire or divided, uniform or sometimes heteromorphic; inflorescence a terminal or axillary simple peduncled raceme, rarely sparingly branched, bracteate; lowest bracts usually barren, adpressed; bracteoles 2 at the base of the pedicels or 0; flowers very small to large, often showy, yellow, purple, or blue in colour.

Genera 4, with about between 400 and 500 described species, found in temperate or tropical regions.

Calyx deeply 5-partite; utricles tubular with 2 spirally twisted arms

1. *Genlisea* St. Hil.

Calyx of 2 sepals; utricles bladder-like, ovoid or globose

2. *Utricularia* Linn.

7899 1. GENLISEA A. St. Hill., *Voy. Distr. Diamants*, vol. 2, p. 428 (1838)

Calyx longer than the corolla-tube, 5-partite, often pilose; tube shallowly campanulate; lobes longer than the tube, lanceolate, subacuminate. *Corolla* bilabiate; tube extremely short; upper lip erect, entire, or emarginate; lower lip larger than the upper, with a vaulted more or less 2-gibbous palate and a deflexed 3-lobed margin, spurred. *Stamens* 2, affixed at the apex of the corolla-tube; filaments curved and flattened, not much larger than the anthers; anthers 2-theous, with the thecae subdistinct or confluent. *Ovary* more or less globose, 1-chambered, with numerous ovules, sometimes hirsute; style extremely short and thick; stigma 2-lipped, with one lip larger and sometimes reduced to a subulate appendage. *Fruit* a capsule, usually globose, circumscissile or breaking up irregularly. *Seeds* ovoid, often very oblique.

Rootless herbs, growing in swamps, bearing pitcher-like organs; primary axis terminated by an inflorescence and producing at the base rosettes of leaves which are often very dense and also producing root-like organs from the axis or base of axillary buds; leaves heteromorphic; foliage leaves petioled, entire, spatulate to suborbicular, persistent at the time of flowering; pitcher leaves consisting of a stalk or a slender tube, cylindric from an ellipsoid base, and passing into 2 long ribbon-like spirally twisted arms, with the arms and tube provided on the inner side with transverse bands of stiff reversed hairs; inflorescence a raceme, peduncled, bracteate; lower bracts usually barren, adpressed; bracteoles 2, at the base of the pedicels.

Described species 23, found in Brazil, British Guiana and Africa; 1 species in South Africa, recorded from the Transvaal, Natal, and Pondoland. (Type: *G. aurea* A. St. Hill.)

7901 2. UTRICULARIA Linn., *Sp. Pl.*, ed. 1, p. 18 (1753)

Sepals 2, longer than the corolla-tube, free or united at the base, elliptic or ovate, usually concave. *Corolla* bilabiate; tube sometimes almost obsolete, or shallowly campanulate; upper lip erect, entire or emarginate; lower lip usually much larger, entire or 3-lobed, usually with a vaulted much-raised and a 2—3-gibbous palate and a spreading or deflexed entire crenulate or lobed margin, usually spurred, but sometimes saccate at the base. *Stamens* 2, affixed at the base of the corolla-tube; filaments usually broadened below; anthers 2-theous, with the thecae subdistant or quite confluent. *Ovary* globose, 1-chambered, with numerous ovules on a free-central placenta; style usually short and thick; stigma 2-lobed, with one lobe very much larger than the other, rarely lobes equal, sometimes stigma sessile. *Fruit* a capsule breaking up into 2 valves or dehiscing irregularly. *Seeds* usually very small, variously shaped, sometimes more or less conical from a truncate base, or discoid; cotyledons fleshy.

Rootless aquatic or terrestrial or epiphytic herbs, nearly always provided with minute bladder-like organs; stolons floating in still water, or creeping on mud, rarely attached to stones or rocks in running water; leaves petioled, normally always entire, linear or orbicular or reniform, rarely peltate, often decayed at the time of flowering; in the aquatic forms the leaves are more or less divided into filiform or capillary segments; inflorescence a peduncled raceme, bracteate; those of certain aquatic forms held above water by a whorl of modified spongy leaves; bracteoles 2, at the base of the pedicel or 0.

Described species about 400, but probably not all valid, mainly massed in the tropics of both hemispheres; 15 species described from South Africa, fairly generally distributed. (Type: *U. vulgaris* Linn.)

171. ACANTHACEAE

Flowers bisexual, irregular or subregular. *Calyx* 4- or 5-partite mostly nearly to the base, very rarely 2-lipped, normally shorter than the corolla. *Corolla* gamopetalous, 2-lipped, 1-lipped, or 5-lobed; tube cylindric, funnel-shaped, tubular or campanulate; upper lip (when corolla is 2-lipped) usually entire, emarginate or 2-toothed; lower lip 3-lobed or 3-toothed. *Stamens* inserted on the corolla and alternating with the lobes, usually 4 and didymous, or 2, included or exserted; filaments normally linear; anthers 1- or 2-theous, with the thecae at the same level or one theca above the other, acute or tailed at the base, sometimes hairy. *Disc* various or inconspicuous. *Ovary* superior, 2-chambered, with usually 2 ovules in each chamber, rarely ovule only 1, or ovules 3 or more; style terete or long filiform, included or exserted; stigma simple or of 1 linear lobe or of 2 equal or unequal lobes. *Fruit* a loculicidal capsule, often elastically dehiscent; in a few genera the placentas remain attached to the top of the capsule and spring up elastically from the base. *Seeds* usually as many as the ovules or sometimes fewer by abortion, smooth, rugose, tubercled or muricate, sometimes with a membranous wing or covered with hygroscopic hairs; cotyledons usually conforming to the shape of the seed; radicle usually conical, medium or curved and lying against the edge of the cotyledons.

Herbs or shrubs, sometimes climbing; leaves opposite, cauline, rarely radical, nearly always simple, entire; stipules 0; inflorescence very various, spicate, cymose, paniced, or flowers in heads, clusters, or solitary; bracts large, small, or 0; bracteoles 2, large or small, exceeding or shorter than the calyx, sometimes minute or 0.

Genera about 180, with over 2,000 species, abundant in the tropics; absent in cold regions; represented in Europe by only 3 or 4 species of *Acanthus* which reach the Mediterranean.

1. The 2 lower filaments 2-fid near the top, with one branch distinct or nearly obsolete and the other branch bearing the anther; ovary with 2 hollows on the upper side filled with glands

20. *Blepharis* Juss.

Filaments not divided at the apex; ovary without hollows filled with glands 2

2. Corolla 1-lipped; anthers 1-theous 3
- Corolla regular or 2-lipped; anthers 2-theous 4

3. Bracts spinous-toothed; seeds covered with feathery hygroscopic hairs

21. *Acanthopsis* Harv.

Bracts not spinous-toothed; seeds without hygroscopic hairs

19. *Sclerochiton* Harv.

4. Calyx usually of 10—18 linear teeth, more rarely of a shallow saucer-like structure hardly exceeding the disc 5
- Calyx 2—5-lobed or -partite 5

2. *Thunbergia* Retz.

5. Calyx 2-lobed, 4-lobed or -partite 6
- Calyx 5-lobed or -partite 10

6. Calyx 2-lobed, with one lobe 3-fid and the other lobe 2-fid; upper stamens with 2-theous anthers; lower stamens with 1-theous anthers

18. *Neuracanthus* Nees

Calyx 4-lobed or -partite 7

7. Normally 2 stamens on long filaments and exserted and 2 or 3 stamens included and with or without anthers or abortive anthers; ovary chambers with 1 perfect and 1 abortive ovule 17. *Barleria* Linn.

- Stamens all exserted, rarely included and all bearing perfect anthers;
ovary with 2 to several ovules in each chamber ... 8
8. Ovules 2 in each ovary-chamber ... **6. Petalidium** Nees
Ovules 4 to several in each ovary-chamber ... 9
9. Flowers intermingled with about 6 stout spines and several bracts
Flowers not intermingled with thorns **4. Asteracantha** Nees
1. Elytraria L. C. Rich.
10. Stamens 2 ... 11
Stamens 4 ... 30
11. Staminodes present ... 12
Staminodes absent ... 14
12. Flowers axillary and solitary or few together
9. Chaetacanthus Nees
Inflorescence a terminal lax raceme or of densely arranged abbreviated
cymes ... 13
13. Calyx much shorter than the corolla; anthers hairy on the back
29. Mackaya Harv.
Calyx longer than the corolla; anthers glabrous
35. Ruttya Harv.
14. Anthers 1-theous ... 15
Anthers 2-theous ... 16
15. Corolla 5-lobed ... **24. Ruspolia** Lindau
Corolla 2-lipped ... **28. Hypoestes** Soland.
16. Corolla 5-lobed ... **9. Chaetacanthus** Nees
Corolla 2-lipped ... 17
17. Style lying in a channel which extends from the upper corolla-lip to near
the base of the tube ... **26. Macrorungia** C. B. Cl.
Style not lying in a channel in the corolla-tube ... 18
18. Lower anther-theca tailed, very rarely only muticous ... 19
Anther-thecae not tailed ... 23
19. Calyx with a distinct campanulate tube; corolla-tube not cylindric; lat-
eral lobes of lower corolla-lip falcately oblong
33. Duvernoia E. Mey.
Calyx divided to or almost to the base; lateral lobes of lower corolla-lip
not falcately oblong ... 20
20. Upper lip of corolla linear-oblong; corolla-tube long narrow-cylindric
41. Aulojusticia Lindau
Upper lip of corolla not linear-oblong; corolla-tube campanulate, sub-
campanulate, or broadly tubular, shorter or about as long as the lips ... 21
21. Seeds smooth ... **38. Monechma** Hochst.
Seeds rugose, muricate, tubercled, or ribbed ... 22
22. One anther-theca distinctly above the other, very rarely of almost equal
height ... **37. Justicia** Linn.
Anther-thecae scarcely one above the other
39. Adhatoda Nees
23. Anther-thecae at equal height or scarcely at different heights ... 24
One anther-theca distinctly above the other ... 26

- | | | | | | | |
|---|-----|-----|-----|-----|-------------------------------------|----|
| 24. Corolla-tube cylindric, longer than the lips | | | | | | |
| Corolla-tube rather shorter than the lips | ... | ... | ... | ... | ... | 25 |
| | | | | | 30. Ecboium Kurz | |
| 25. Seed with a narrow membranous marginal wing | | | | | 34. Megalochlamys Lindau | |
| Seed without a marginal wing | ... | | | | 40. Anisotes Nees | |
| 26. Flowers axillary and solitary | ... | | | | 31. Siphonoglossa Oerst. | |
| Inflorescence a spike or panicle | ... | ... | ... | ... | ... | 27 |
| 27. Corolla-tube with 2 longitudinal ridges which are usually hairy | | | | | 27. Dicliptera Juss. | |
| Corolla-tube without 2 distinct longitudinal ridges within | ... | | | | ... | 28 |
| 28. Corolla-tube long-cylindric | ... | ... | | | 32. Rhinacanthus Nees | |
| Corolla-tube subcampanulate or shortly cylindric or tubular below and somewhat campanulate above | ... | ... | ... | ... | ... | 29 |
| 29. Stamens affixed in the corolla-throat; corolla-tube cylindric or tubular below and somewhat subcampanulate above | | | | | 25. Peristrophe Nees | |
| Stamens affixed near the base of the corolla-tube which is campanulate and shorter than the lips | ... | ... | | | 36. Isoglossa Oerst. | |
| 30. Ovules 1—2 in each ovary chamber | ... | ... | ... | ... | ... | 31 |
| Ovules 3—13 in each ovary chamber | ... | ... | ... | ... | ... | 39 |
| 31. Seeds smooth or tuberculed, without hydropscopic hairs | ... | ... | ... | ... | ... | 32 |
| Seeds hairy or with hydropscopic hairs | ... | ... | ... | ... | ... | 33 |
| 32. Flowers solitary, axillary or a few approximated towards the ends of the branches | ... | ... | ... | | 14. Glossochilus Nees | |
| Inflorescence a spike or panicle | ... | | | | 23. Asystasia Blume | |
| 33. Calyx with a short but distinct narrowly campanulate or tubular tube | ... | | | | | 34 |
| Calyx divided almost at the base; if a short tube present, then the corolla bilabiate or flowers enclosed in 2 large bracts | ... | ... | ... | ... | ... | 35 |
| 34. Calyx-lobes linear, acuminate | ... | | | | 7. Dyschoriste Nees | |
| Calyx-lobes ovate, with the upper lobe longer than the others | | | | | 8. Disperma C. B. Cl. | |
| 35. Bracts large and spine-toothed | ... | | | | 16. Crabbea Harv. | |
| Bracts not spine-toothed | ... | ... | ... | ... | ... | 36 |
| 36. Calyx as long as the corolla | ... | | | | 5. Phaulopsis Willd. | |
| Calyx shorter than the corolla-tube | ... | ... | ... | ... | ... | 37 |
| 37. Corolla 5-lobed or subbilabiate | ... | | | | 22. Crossandra Salisb. | |
| Corolla bilabiate | ... | ... | ... | ... | ... | 38 |
| 38. Each flower with 2 large ovate or elliptic bracteoles enclosing the calyx | | | | | 6. Petalidium Nees | |
| Bracteoles 0 | ... | ... | ... | ... | 15. Lepidagathus Willd. | |
| 39. Bracts large and spine-toothed | ... | | | | 16. Crabbea Harv. | |
| Bracts not spine-toothed | ... | ... | ... | ... | ... | 40 |
| 40. Seed with a membranous marginal wing, without hydropscopic hairs | | | | | 13. Dinteracanthus C. B. Cl. | |
| Seed with hydropscopic hairs | ... | ... | ... | ... | ... | 41 |

41. Calyx about as long as or longer than the corolla-tube; corolla bilabiate
 3. *Hygrophila* R. Br.
 Calyx shorter than the corolla-tube; corolla 5-lobed 42
42. Anther-thecae spurred or distinctly muticous at the base
 11. *Ruellia* C. B. Cl.
 Anther-thecae not muticous or spurred 43
43. Flowers in small axillary clusters, approximated into quasi-terminal
 spikes 10. *Hemigraphis* Nees
 Flowers axillary, not running into strobilate spikes
 12. *Ruellia* Linn.

NOTE.—The genus *Hiernia* Sp. Moore (No. 7615) placed with the *Scrophulariaceae* but considered by some authors to belong to the family *Acanthaceae*. It would fit into the above key at No. 39 and would differ from all the genera in having no bracts.—E. P. P.

7908 1. ELYTRARIA L. C. Rich., in Michx., Fl. Bor. Amer., vol. 1, p. 8 (1803)

Calyx as long as the corolla, 4-partite almost to the base; segments unequal, lanceolate or linear-lanceolate, with 1 segment deeply divided or sometimes the longest segment bifid. *Corolla* bilabiate, with 1 lip shortly 2-lobed; lobes oblong or ovate, imbricate in bud. *Stamens* 2, affixed in the corolla-throat; filaments very short; anthers 2-thealous, with or without a minute spur at the base. *Ovary* more or less ellipsoid, 2-chambered, with several ovules in each chamber; style linear; stigma minutely 2-lobed. *Fruit* an acute ellipsoid capsule. *Seeds* minute, ovoid, reticulated, minutely papillose.

Herbs with short stems; leaves alternate, crowded, subradical, often long obovate; inflorescence a narrow spike, simple or divided, covered with spirally imbricate bracts on the non-flowering part; bract and 2 bracteoles subtending the flowers.

Species about 6, found in Africa, Asia, and America; 1 species in South Africa, recorded from the Transvaal. (Type: *E. virgata* Michx.)

7914 2. THUNBERGIA Retz. in Phys. Saellsk. Handl., vol. 1, p. 163 (1776)

Calyx usually consisting of 10—18 linear teeth, much shorter than the corolla-tube, more rarely a small saucer-like structure hardly exceeding the disc. *Corolla* 5-lobed; tube usually cylindric at the base and then becoming funnel-shaped, sometimes pilose within near the base; lobes obovate, spreading, contorted in the bud. *Stamens* 4, didymous or subdidymous, affixed on the lower part of the corolla-tube, included; filaments broadly linear; anthers 2-thealous, each theca with a short apiculus or anthers with a single apiculus and 2-spurred at the base, with the connective usually produced into an appendage, ciliate, or covered with long multicellular hairs which are sometimes club-shaped. *Ovary* often ovate in outline, 2-chambered, with 2 ovules in each chamber; style terete, included, sometimes with stalked glands on the upper part; stigma funnel-shaped, with 2 infolding lobes and a tuft of hairs on each lobe and glandular with stalked glands or stigma of two unequal lobes one above the other. *Fruit* a globose capsule, abruptly rostrate, loculicidally dehiscent. *Seed* thick, broadly elliptic in outline, with a cavity or groove on one face and convex or with a cavity on the other face, rugose; cotyledons (in seeds examined) thick and fleshy, elliptic; radicle bent upwards and lying in a cavity on one of the cotyledons; endosperm 0.

Herbaceous plants, rambling, twining, or scandent, or small and suberect with the stems from underground rootstock; leaves opposite, ovate, lanceolate, some-

times cordate or hastate; inflorescence a terminal raceme (axillary, solitary and pedicelled in the South African species); bracteoles 2, large, elliptic or ovate.

Described species about 200, natives of Africa, south-east Asia, and the Mascarene Islands; 19 species found in South Africa, extending from the Transvaal, Zululand, Natal to the Cape; also recorded from a few inland districts. (Type: *T. capensis* Retz.)

7926

3. HYGROPHILA R. Br., Prodr., p. 479 (1810)

Calyx about as long as or longer than the corolla-tube, 5-partite almost to the base; segments linear, sometimes with one lobe longer and broader than the other, often glandular-pilose. *Corolla* bilabiate; tube cylindric or tubular below, becoming widened above, sometimes somewhat saccate on the widened portion; upper lip 2-lobed, with the lobes united high up and with the free portion recurved oblong and rounded or truncate at the apex or bifid; lower lip 3-lobed, with the lobes often oblong, elliptic-oblong, or suborbicular and strongly reflexed. *Stamens* 4, didymous, affixed about the middle of the corolla-tube or in the mouth of the corolla-tube or at the base of the upper lip; filaments usually broadly linear, sometimes with coarse setae; anthers 2-theous, with the thecae parallel. *Disc* 0. *Ovary* oblong or linear-oblong in outline, 2-chambered, with 10—13 ovules in each chamber; style terete-filiform, exserted or subexserted; stigma of 2 very unequal lobes. *Fruit* a linear or linear-oblong capsule. *Seeds* compressed, with hygroscopic hairs.

Herbs, often glandular, erect or spreading; leaves opposite, linear to lanceolate, entire; inflorescence various or flowers solitary in the axils of the leaves, pedicelled or subsessile, 2—20 at each node, or bract resembling the leaves; bracteoles 0.

Described species 92, natives of Africa, the Mascarene Islands Asia, and the tropics generally; 4 species in South Africa, recorded from South West Africa, Bechuanaland, and the Transvaal. (Type: *H. angustifolia* R. Br.)

7927

4. ASTERACANTHA Nees in Wallich, Pl. As. Rar., vol. 3, p. 75 (1832)

Sepals 4, shorter than the corolla-tube, unequal, with one sepal longer and broader than the others and one bifid at the apex, linear-lanceolate, with membranous margins and with rounded keels on the back. *Corolla* bilabiate; tube tubular; upper lip 2-lobed, with the lobes elliptic; lower lip 3-lobed, with the lobes oblong and with a distinct palate. *Stamens* 4, didymous, affixed at the base of the upper lip of the corolla, exserted from the corolla-tube; filaments of longer pair of stamens broadly linear, of shorter pair narrower; anthers 2-theous, oblong, with the thecae parallel. *Disc* 0. *Ovary* oblong in outline, 2-chambered, with 4—8 ovules in each chamber; style filiform, shortly exserted; stigma simple. *Fruit* a capsule, linear-oblong in outline, 4—8-seeded.

A stout erect herb; leaves opposite, without clearly distinct petioles, linear or linear-lanceolate; flowers in dense clusters in the axils of the leaves, intermingled with about 6 stout thorns and several bracts.

A monotypic(?) genus widely distributed in Africa, India, and Ceylon; recorded from Zululand in South Africa. (Type: *A. longifolia* (L.) Nees)

7932

5. PHAULOPSIS Willd., Sp. Pl., vol. 3, p. 342 (1800)

(*Phaylopsis* Willd.)

Calyx as long as the corolla, 5-partite to the base, with the upper segment ovate and the 2 lower segments linear and the 2 inner segments shorter, glandular-hairy, persistent. *Corolla* 5-lobed, subbilabiate, shortly pilose on

the upper half; tube curved, tubular; upper lip 2-lobed; lower lip 3-lobed; lobes all oblong or spatulate. *Stamens* 4, affixed about the middle of the corolla-tube, included; filaments linear; anthers 2-theous, oblong-linear, with the thecae parallel and sometimes mucronate at the base. *Disc* annular. *Ovary* ellipsoid, 2-chambered, with 2 ovules in each chamber; style terete, finely pilose; stigma unequally 2-lobed. *Fruit* a capsule, compressed, solid at the base, with 1—4 seeds, dehiscing elastically, pilose; placentae carrying the seeds separating from the capsule-wall and springing up from the bottom; valves boat-shaped. *Seed* compressed, orbicular, covered with hydroscopic hairs; testa chartaceous; cotyledons orbicular; radicle short, conical; endosperm 0.

Scrambling or erect plants; leaves opposite, usually the leaves of each pair unequal, elliptic or lanceolate, entire or crenate; inflorescence a cylindric or ovoid spike; each broad floral leaf enclosing a contracted cyme of usually 3 flowers; bract to each flower 0.

Species 19, natives of Africa, the Mascarene Islands, and India; 2 species in South Africa recorded from the northern Transvaal and Natal. (Type: *P. parviflora* Willd.)

7934 6. *PETALIDIUM* Nees, Wall. Plant. As. Rar., vol. 3, p. 75 (1832)
(*Pseudobarleria* T. Anders.)

Calyx shorter than the corolla-tube, deeply 4—5-partite, glandular; tube shallowly campanulate; segments linear-lanceolate, when 4 segments present then the anticone one usually bifid or 2-toothed and the 2 lateral segments slightly smaller. *Corolla* bilabiate, puberulous, tube straight or curved, usually cylindric below and campanulate above; upper lip 2-lobed; lower lip 3-lobed with the palate prominently transversely ribbed and beset with retorse hairs; lobes obovate, obtuse or emarginate. *Stamens* 4, didymous, in 2 pairs, affixed about the middle of the corolla-tube included; filaments broadly linear; anthers 2-theous, oblong, with the thecae parallel and mucronate at the base. *Disc* annular. *Ovary* 2-chambered, with 2 ovules in each chamber; style terete, hairy, included; stigma of 2 linear unequal lobes. *Fruit* a compressed capsule narrowed at the base and apex, normally with only 2 seeds. *Seeds* orbicular, densely covered with hydroscopic hairs; testa chartaceous; cotyledons flat, ovate, lobed at the base; radicle conical.

Shrubs or procumbent perennial herbs, variously pubescent or glabrescent; leaves opposite, varying in shape from ovate to linear, entire or toothed; inflorescence on contracted side shoots and few- to many-flowered, or an axillary spike or flowers solitary; bracts present or absent; bracteoles 2, large, enclosing the calyx.

Described species 36, natives of Africa and India, a doubtful record from the Mascarene Islands; 19 species occur in South Africa and recorded from South West Africa, the north-western Cape Province, the Kalahari, and the northern Transvaal. Type: *P. barberioides* Nees)

7939 7. *DYSCHORISTE* Nees in Wallich. Pl. As. Rar., vol. 3, p. 75
(1832)

Calyx about as long as the corolla-tube or shorter, 5-ribbed, persistent; tube narrowly campanulate or tubular; lobes linear, acuminate, about as long as or shorter than the tube. *Corolla* 5-lobed, pubescent; tube cylindric or tubular below, campanulate above; lobes oblong. *Stamens* 4, subsimilar, affixed in the throat of the corolla-tube or about half-way down, exerted or included; filaments linear; anthers 2-theous, oblong, with the thecae parallel and usually mucicous at the base. *Disc* annular. *Ovary* elliptic in

outline, 2-chambered, with 2 ovules in each chamber; style terete, exserted, hairy; stigma usually of a single linear lobe, rarely with 2 minute lobes or a lip at the base. *Fruit* a cylindric capsule, solid at the base; valves long, boat-shaped, sometimes with 2 ribs. *Seeds* usually 4, compressed, orbicular, covered with hydropscopic hairs; testa chartaceous; cotyledons elliptic; radicle small, conical.

Small shrubs; leaves opposite, usually elliptic, usually entire; flowers subsessile, axillary, clustered, or scattered and solitary; bracteoles 2, shorter than the calyx.

Described species 108, natives of Africa, America, and Asia; 7 species found in South Africa, recorded from Bechuanaland, the Transvaal and Natal to the Komga district; also from the Vryburg and Hay districts. (Type: *D. cernua* Nees)

7940 8. DISPERMA C. B. Cl. in Flor. Trop. Afr., vol. 5, p. 79 (1899)

Calyx shorter than the corolla-tube, 5-lobed, glandular-hairy; tube narrowly campanulate; lobes ovate, subacuminate, with the posticous lobes larger than the others. *Corolla* subbilabiate, 5-lobed; tube tubular below; widening upwards; upper lip 3-lobed, transversely ribbed on the palate and with stiff reflexed hairs; lower lip 2-lobed; all the lobes retuse at the apex. *Stamens* in pairs, affixed in the corolla-throat, slightly exserted; anthers 2-theous, with the thecae parallel; filaments linear. *Disc* annular. *Ovary* 2-chambered, with the thecae parallel; ovules in each chamber; style subterete, exserted, sparsely hairy; stigma of 2 unequal lobes. *Fruit* a 2-seeded obovoid-ellipsoid much flattened woody brown shining capsule. *Seeds* discoid, with hydropscopic hairs.

Small or medium-sized shrubs, more or less hairy; leaves opposite, entire, crenate or toothed; flowers in axillary clusters; bract oblong, about as long as the calyx; bracteoles similar, smaller.

An African genus of 17 described species; 1 or 2 species recorded from the Transvaal.

NOTE.—The calyx in the flowering stage is not split as described by C. B. Clarke; it may split as the capsule ripens.—E. P. P.

7941 9. CHAETACANTHUS Nees in Lindley Nat. Syst., ed. 2, p. 444 (1836)

Calyx slightly longer or shorter than the corolla-tube, 5-partite almost to the base, persistent, usually glandular, more rarely almost glabrous. *Corolla* 5-lobed, pubescent; tube sometimes campanulate above, otherwise tubular or cylindric; lobes oblong, truncate or obtuse. *Stamens* 2, affixed in the corolla-throat, slightly exserted; filaments linear; anthers 2-theous, oblong or linear-oblong in outline, with the thecae parallel and mucous at the base; rudiments of 2 other stamens sometimes present. *Ovary* oblong in outline, 2-chambered, with 2 ovules in each chamber; style terete, slightly exserted, hairy; stigma simple. *Fruit* a capsule, lanceolate in outline, shortly rostrate at the apex; valves boat-shaped. *Seeds* normally 4, orbicular in outline, biconvex, covered with hydropscopic hairs; cotyledons semi-orbicular, shortly and bluntly lobed at the base; radicle conical, differentiated from the cotyledons.

Low shrubs with stems from a woody rootstock or stolon; leaves opposite, entire; flowers axillary, solitary or few together; bracteoles 2, linear, oblong, or spatulate, usually much shorter than the calyx, rarely longer.

Endemic; 8 species described from South Africa and recorded from the Transvaal, Zululand, Natal, the Orange Free State, and the coastal districts to the Mossel Bay district. (Type: *C. setiger* (Pers.) Lindl.)

7945 10. HEMIGRAPHIS Nees in DC. Prodr., vol. 11, p. 722 (1847)

Calyx about as long as or slightly shorter than the corolla-tube, 5-partite almost to the base, glandular; segments linear. *Corolla* 5-lobed; tube tubular; lobes elliptic, obtuse. *Stamens* 4, didymous, affixed in pairs half-way down the corolla-tube, included; filaments linear; anthers 2-theous, oblong, with the thecae parallel. *Ovary* oblong in outline, 2-chambered, with 6 to 8 ovules in each chamber, hairy above; style terete, shorter than the ovary, included; stigma simple. *Fruit* a cylindric capsule, seed-bearing from the base, usually perfecting 6—12 seeds. *Seeds* with hydropscopic hairs.

Small subherbaceous plants, sometimes creeping and rooting from the nodes; leaves opposite, entire or crenate; flowers in small axillary clusters, approximated into quasi-terminal spikes; bract ovate or oblong; bracteoles 2, linear or absent.

Described species 93, natives of Africa, India, and Malaya; 1 species in South Africa recorded from British Bechuanaland. (Type: *H. elegans* Nees)

7946 11. RUELLIOPSIS C. B. Cl., in Flor. Trop. Afr., vol. 5, p. 59 (1899)

Calyx shorter than the corolla-tube, 5-partite; tube shortly campanulate; segments unequal, linear, setose. *Corolla* 5-lobed, pubescent; tube narrow below, widening above; lobes obovate. *Stamens* 4, didymous, affixed in pairs in the upper half of the corolla-tube, included; filaments linear; anthers 2-theous, with the thecae separating and spurred, or muticous at the base. *Ovary* ovate in outline, 2-chambered, with 4 ovules in each chamber; style terete, slightly exserted; stigma of 1 linear lobe. *Fruit* a cylindric capsule, 8-seeded from the base. *Seeds* compressed, orbicular, covered with hydropscopic hairs.

Small shrubs, sometimes with trailing stems from a woody rootstock; stems, when trailing, rooting from the nodes; leaves opposite, linear, entire, usually setose; flowers solitary, axillary; bract linear, longer than the calyx and broader than the bracteoles, setose; bracteoles 2, about as long as the calyx, linear, setose.

An African genus of 2 or 3 species; 1 species in South Africa, recorded from the Transvaal, Bechuanaland, the Vryburg and Mafeking districts, and a single record from the Albany district. (Type: *R. setosus* (Nees) C. B. Cl.)

7965 12. RUELLIA Linn., Sp. Pl., ed. 1, p. 634 (1753)

Calyx shorter than the corolla-tube, 5-partite almost to the base or obscurely 2-lipped, usually pubescent, segments linear-lanceolate or lanceolate and acuminate; when 2-lipped then 2 teeth free nearly to the base and the other 3 teeth connate, sometimes nearly to the middle. *Corolla* 5-lobed, usually pubescent; tube campanulate in the upper half, tubular below; lobes obovate, shorter than the tube. *Stamens* 4, didymous, affixed at the middle of the corolla-tube or on the lower half, slightly exserted; filaments linear, sometimes the filaments of each pair connate at the base; anthers 2-theous, with the thecae parallel and not spurred at the base. *Ovary* ovoid, 2-chambered, with 3—8 ovules in each chamber; style terete, slightly exserted; stigma of 1 linear lobe. *Capsule* cylindric or elliptic in outline, narrowed and solid at the base, usually perfecting more than 4 seeds in the clavate upper part. *Seeds* compressed, discoid, with hydropscopic hairs on the margins; cotyledons ovate or orbicular, cordate at the base; radicle conical, distinct.

Undershrubs, with a deep tap-root or a woody rootstock; leaves opposite, nearly or quite entire; flowers axillary, not running into strobilate spikes; bracteoles 2, spatulate-elliptic or narrow-oblong, about as long as or longer than the calyx.

Described species over 150, mostly tropical American, Africa and the Mascarene Islands, and the warmer parts of Asia and Australia; 7 species in South Africa, extending from South West Africa, Bechuanaland, the Transvaal, Natal to the Swellendam district. (Type: *R. tuberosa* Linn.)

7965a 13. DINTERACANTHUS C. B. Cl. ex Schinz, in Vierteljahrss der Natur. Gesell., Zurich, p. 417 (1915)

Calyx shorter than the corolla-tube, 5-partite almost to the base, pilose; segments unequal, 2 lanceolate and narrowed at the base, the other 3 linear. *Corolla* subbilabiate, pilose; tube widening from the base upwards or cylindric below and campanulate above; upper lip 2-lobed; lower lip 3-lobed, with 2 parallel swollen ridges on the face of the middle lobe; lobes subequal. *Stamens* 4, didymous, affixed in pairs on the lower part of the corolla-tube, exerted or subexserted; filaments linear, those of each pair connate below, sometimes with stalked glands. *Disc* swollen. *Ovary* 2-chambered, with 6 ovules in each chamber; style filiform, included or exerted; stigma of 1 linear lobe. *Fruit* a capsule, linear in outline; valves ribbed. *Seed* compressed, discoid, with a membranous marginal wing, without hydropscopic hairs.

Villous tomentose or scabrid shrubs; leaves opposite, entire; flowers subsessile, solitary or fascicled; bracteoles 2, resembling the leaves.

Endemic; species 2, recorded from South West Africa. (Type: *D. marlothii* (Engl.) Schinz)

7970 14. GLOSSOCHILUS Nees in DC. Prodr., vol. 11, p. 83 (1847)

Calyx about $\frac{3}{4}$ as long as the corolla, 5-partite almost to the base; segments linear, ciliate. *Corolla* bilabiate, pubescent; tube funnel-shaped, pilose within near the base; lower lip 3-lobed, with the middle lobe ovate and with a deep channel and transverse ridges and the lateral lobes oblong; upper lip 2-lobed, with the lobes oblong. *Stamens* 4, didymous, affixed in pairs on the lower part of the corolla-tube, included; filaments linear; anthers 2-theous, with 1 theca slightly lower than the other, mucinous at the base. *Disc* cupular. *Ovary* ovate in outline, with 2 ovules in each chamber; style terete, hairy near the base; stigma of 2 equal lobes. *Fruit* a capsule, linear in outline. *Seed* compressed, elliptic, produced into a blunt projection on one side, grooved on the margin, with a deep depression covering the whole of one face, without hairs; cotyledons orbicular; radicle conical, evident and distinct from the cotyledons.

A small shrub with stems to about 6 in. high from a deep tap-root; leaves opposite, linear to spatulate-linear, glabrescent; flowers solitary, axillary or a few approximated towards the ends of the branches; bracteoles 0.

Endemic; species 2, recorded from the northern Transvaal, Bechuanaland, Griqualand West, and the Prieska district. (Type: *G. burchellii* Nees)

7971 15. LEPIDAGATHIS Willd., Sp. Pl., vol. 3, p. 400 (1800)

Sepals shorter than the corolla-tube, 5-partite almost to the base, usually hairy; segments unequal, with the posticous segment usually longer and wider than the other and with the lateral segments linear, often pointed or spinose. *Corolla* bilabiate; tube cylindric below, widened above, often with stiff deflexed hairs within at the top of the cylindric part; posticous lip ovate-oblong, emarginate; anticous lip 3-lobed, with 2 deep channels on the outside. *Stamens* 4, affixed about the middle of the corolla-tube, slightly exerted; filaments linear, sometimes with one pair connate for half their length; anthers normally 2-theous, more rarely those of the posticous stamens 1-theous. *Disc* cupular, sometimes produced on one side. *Ovary* 2-chambered, with 2—1 ovules in each chamber, usually hairy on top, sometimes with an apical ring of reflexed hairs; style terete, slightly exerted, glabrous or hairy on lower portion; stigma subglobose or with a broad fleshy lobe and a small lip, or oblong or elliptic. *Fruit* an ovoid or ellipsoid capsule, 2- or 4-seeded, sometimes shortly and bluntly rostrate and with a

ring of hairs at the apex. *Seed* ovate or suborbicular, covered with long hydropscopic hairs; cotyledons ovate, obtuse; radicle conical, distinct from the cotyledons.

Spreading perennial herbs or undershrubs; leaves opposite, entire in the African species; inflorescence densely compound of small scorpioid cymes, capitate or sub-cylindric, often densely hairy, sometimes more or less spinescent; bract elliptic or oblong; bracteoles 0.

Described species 136, natives of Africa, the Mascarin Islands, India, Siam, the Philippine Islands, and the hotter parts of the world generally; 1 species recorded from the Transvaal. (Type: *L. cristata* Willd.)

7972 16. CRABBEA Harv., in Hook. London Journ. Bot., vol. 1, p. 26 (1842)

Calyx longer or shorter than the corolla-tube, 5-partite almost to the base, usually ciliate; segments linear, long-acuminate, often with membranous veined margins, usually unequal, with one lobe slightly longer than the others or the two lateral lobes shorter than the others. *Corolla* bilabiate; tube tubular, widened upwards or cylindric below and tubular above; upper lip 2-lobed; lower lip 3-lobed, usually with 2 large gibbositities at the base; all lobes semi-orbicular or obovate and obtuse. *Stamens* 4, didymous, affixed in the lower portion of the corolla-tube; filaments linear; anthers 2-theous, at slightly different levels, muticous at the base or with a few hairs at the base or sometimes ciliate. *Disc* cupular, sometimes crenate. *Ovary* 2-chambered, with 2—4 ovules in each chamber; style terete, articulated on the ovary, included, glabrous; stigma of 1 lanceolate or ovate lobe, sometimes with a minute tongue at the base. *Fruit* a more or less ellipsoid-cylindric or cylindric capsule, producing 4—8 seeds; valves with a groove on the back. *Seeds* flattened, obovate or oblong, covered with hydropscopic hairs; cotyledons the same shape as the seed; radicle conical, distinct from the cotyledons.

Low shrubs, sometimes acaulescent, with the stems sometimes decumbent, often with cylindric tuberous roots; leaves opposite, linear to obovate, frequently hairy, entire; inflorescence in dense compound axillary sometimes peduncled heads; floral leaves ovate, with the outer very large and empty and the inner containing apparently a cluster of 3—5 flowers which really form a condensed unilateral raceme, usually with innocuous marginal spines; proper bract to each flower linear-lanceolate or 0.

An African genus of 13 described species; 8 species recorded from South Africa, recorded from the Transvaal, Swaziland, the Orange Free State, Natal, and through the coastal belt to the Alexandria district; also recorded from Griqualand West. (Type: *C. hirsuta* Harv.)

7973 17. BARLERIA Linn., Sp. Pl., ed. 1, p. 636 (1753)

Calyx shorter than the corolla-tube, 4-partite almost to the base, sometimes with stalked glands, persistent; segments unequal, ovate, elliptic or lanceolate, sometimes ovate and leaf-like, often pungent, entire, spinoso-dentate, or entire; the two outer sepals enclosing the two inner. *Corolla* subregularly 4—5-lobed or somewhat bilabiate, often hairy; tube tubular, cylindric, or funnel-shaped; lobes obovate, sometimes unequal with one lobe much shorter than the other; when bilabiate, the upper lip 4-lobed. *Stamens* normally 2 on long filaments and exerted and 2—3 stamens on short hairy filaments which are included, the filaments bearing anthers which are empty or contain pollen, or filaments without anthers. *Disc* cup-shaped, sometimes shallowly lobed, more rarely saucer-shaped, sometimes produced on one side. *Ovary* 2-chambered, with 1 perfect and 1 abortive ovule in each chamber or with

2 perfect ovules in each chamber; style terete, exserted; stigma a single linear lobe, sometimes terete and covered with minutely hairy protuberances, sometimes of 2 fleshy lobes, or sometimes capitate. *Capsule* lanceolate in outline, solid in the upper part, with 1—2 seeds in each loculus. *Seeds* flat, ovate, covered with hygroscopic hairs; cotyledons orbicular or ovate; radicle conical, distinct from the cotyledons.

Shrubs or suffrutes, erect, ascending, or procumbent, often with a stout woody rootstock, variously hairy or sometimes glabrescent; leaves opposite, usually with 2 serial buds in their axils and the upper bud forming a normal branch or a reduced inflorescence and the lower bud forming a normal branch or a spine; inflorescence, when fully developed, a dichasium usually reduced to a unilateral cyme or a solitary axillary flower with the solitary flowers often running again into terminal spikes or heads provided with bract-like leaves; bracts and bracteoles spinous or innocuous and leafy, spinoso-dentate, dentate, or entire.

Species over 250, found in the warmer parts of Africa Asia, and America; 44 species in South Africa fairly widely distributed but, in the coastal districts, do not extend west of Riversdale district. (Type: *B. cristata* Linn.)

777 18. NEURACANTHUS Nees in Wallich. Pl. As. Rar., vol. 3, p. 76 (1832)

Calyx almost as long as the corolla-tube, 2-lobed, pilose; upper lip 3-fid or nearly entire; lower lip 2-fid or nearly entire; all the lobes lanceolate, acuminate. *Corolla* plicate, 5-lobed; tube cylindric below, funnel-shaped above, with reflexed hairs without and within; lobes short, triangular. *Stamens* 4, didymous, affixed in the upper part of the corolla-tube, included; upper stamens with 2-theous anthers; lower stamens with 1-theous anthers or sometimes with a second small under-developed anther; filaments linear, scarcely longer than the anthers, hairy; anthers of upper stamens hairy. *Disc* 0. *Ovary* oblong in outline, with 1—2 ovules in each chamber; style terete, included; stigma of 1 oblong lobe. *Fruit* an ovoid compressed beaked capsule, generally 2-seeded, sometimes 4-seeded. *Seeds* discoid, covered with hygroscopic hairs.

Low shrubs, sometimes with prostrate stems, usually stems from a woody rootstock; leaves opposite, often broadly lanceolate, glabrous and variously hairy; inflorescence a condensed unilateral spike or of few-flowered elongated spikes, or reduced to a single flower, strobilate or scattered; bracts ovate or obovate or spinescent; bracteoles 0.

Described species 19, natives of Africa, the Mascarin Islands, and India; 2 species recorded from South Africa found in the northern Transvaal. (Type: *N. tetragonostachys* Nees)

778 19. SCLEROCHITON Harv. in Hook. London Journ. Bot., vol. 1, p. 27 (1842)

Calyx about as long as the corolla-tube, 5-partite to the base; segments equal or unequal, sometimes chartaceous and distinctly ribbed, with the two outer segments sometimes bifid at the apex. *Corolla* 1-lipped, 5-lobed; tube broadly tubular, shorter than the lip, often hairy within; lobes all oblong. *Stamens* 4, equal or subequal, affixed at the middle of the corolla-tube, exserted; filaments broadly linear; anthers 1-theous, usually hairy. *Disc* saucer-shaped. *Ovary* ellipsoid, swollen at the base, 2-chambered, with 1—2 ovules in each chamber; style linear, exserted; stigma of 2 minute lobes. *Fruit* a woody ellipsoid capsule, 2—4-seeded. *Seeds* oblong, flattened, oblique at the base, without hygroscopic hairs; testa somewhat fleshy; tegmen membranous; cotyledons obovate-elliptic; radicle conical, distinct from the cotyledons.

Shrubs, sometimes diffuse or scrambling, nearly glabrous; leaves opposite, usually elliptic; inflorescence a short, rarely long, spike; bracts ovate or 0; bracteoles 2, ovate, entire, shorter than the calyx.

An African genus of 11 described species; 2 species occur in South Africa and recorded from the northern Transvaal, Swaziland, Zululand, Natal, East Griqualand to the Kingwilliamstown district and also from the Somerset East district. (Type: *S. harveyanus* Nees)

7982

20. BLEPHARIS Juss., Gen., p. 103 (1789)

Calyx longer than the corolla-tube, 4-partite to the base, firm; segments unequal, lanceolate or oblong, with the anticus sepal emarginate, bifid, or bispinose and the posticus sepal larger and the lateral sepals smaller and narrower. *Corolla* 1-lipped, 3—5-lobed, occasionally entire, normally with reflexed hairs on the outer and inner face of the lip; tube vase-shaped, with a ring of hairs in the mouth; lobes more or less quadrate, oblong or transversely oblong, with the lateral lobes very much smaller than the others or almost obsolete or none. *Stamens* 4, equal, affixed in the mouth of the corolla-tube; filaments terete, with those of the anticus stamens flattened above and produced into a protuberance which is shorter than or as long as the anthers; anthers 1-theous, ciliate. *Disc* saucer-shaped or annular. *Ovary* more or less ellipsoid, 2-chambered, with 2 ovules in each chamber or with 1 ovule in each chamber and with or without an abortive ovule, with 2 glandular bosses at the apex or with an apical cap; style linear; stigma 2-lobed, with the lobes distinct or minute or more rarely of a small ovate lobe. *Fruit* a capsule, oblong to ovate in outline. *Seeds* laterally compressed, ovate, covered with long hygroscopic hairs; cotyledons ovate, deeply lobed at the base, with one lobe bluntly tailed; radicle terete, lying between the lobes of the corolla.

Procumbent annuals or with the subterranean parts woody and persistent and the procumbent or erect aerial branches dying off each year or erect perennial suffrutes; leaves opposite, often in unequal pairs, entire, toothed, or spinous-toothed, often coriaceous and asperous; inflorescence a decussate several-flowered spike with about 8 decussate bracts or a scorpioid cyme; bracts nearly always spinous-toothed, seldom entire, accrescent; bracteoles 2, usually setaceous, seldom resembling the bracts, sometimes absent.

Species about 80, mostly African but also found in Arabia, India, and the Dutch East Indies; 41 species in South Africa, generally distributed.

7982

21. ACANTHOPSIS Harv. in Hook. London Journ. Bot., vol. 1, p. 28 (1842)

Calyx longer than the corolla-tube, very rarely shorter, 4-partite to the base, persistent, hairy; segments unequal; outer segments broadly ovate or elliptic, ribbed; lateral sepals smaller, lanceolate or linear. *Corolla* 1-lipped, 5-lobed, hairy; tube usually tubular, more rarely long cylindric; lobes usually quadrate, with the 2 lateral lobes much smaller than the other 3. *Stamens* 4, affixed in the mouth of the corolla-tube; filaments stout, linear, none produced into a protuberance behind the anthers, sometimes hairy; anthers 1-theous, oblong, ciliate. *Disc* not very evident. *Ovary* somewhat ellipsoid, 2-chambered, with 2 ovules in each chamber; style filiform; stigma of 1 linear lobe, with a minute lobe at the base. *Fruit* a compressed ovate capsule. *Seed* elliptic, covered with long feathery hygroscopic hairs; cotyledons ovate, unequally lobed at the base; radicle cylindric, lying between the lobes of the cotyledons.

Shrubby or acaulescent plants, usually densely leafy; leaves usually spinous-toothed; inflorescence a cylindric or globose spike; bracts spinous-toothed, some-

times with a secondary lot of spines on the inner face, sometimes hairy, rarely with gland-tipped hairs; bracteoles 2, usually linear.

Endemic; species 8, recorded from South West Africa, Namaqualand, and the Kenhardt, Hay, Prieska, Prince Albert, and Fraserburg districts. (Type: *A. dispersma* Harv. ex Nees)

7985 22. CROSSANDRA Salisb., *Parad. Londin.*, t. 12 (1806)

Calyx shorter than the corolla-tube, 5-partite to the base, often glandular with stalked glands; segments unequal, elliptic or lanceolate, with the uppermost segment broader and often 2-toothed. *Corolla* 5-lobed, subbilabiate, with 2 gibbosities on the palate; tube long-cylindric; lobes rotund. *Stamens* 4, affixed in the uppermost part of the corolla-tube, included; filaments linear, shorter than the anthers; anthers 1-theous, sometimes ciliate. *Disc* not evident. *Ovary* ellipsoid, 2-chambered, with 2 ovules in each chamber, sometimes hairy at the apex; style filamentous, included; stigma terete, thicker than the style, obscurely 2-fid, more or less trumpet-mouthed. *Fruit* an oblong-ellipsoid capsule, usually 4-seeded. *Seed* ovate, compressed, covered with tufts of hairs or adpressed scales fringed with tufts of hairs; hairs slightly hyroscopic; cotyledons transversely elliptic; radicle small.

Shrubs, sometimes acaulescent, often with thick cylindric roots; leaves opposite, sometimes very large and elliptic; inflorescence a spike, often long-peduncled; bracts large, ovate, usually pubescent, sometimes papery, hairy or subglabrous; bracteoles linear or lanceolate, as long as the calyx.

Described species 52, natives of Africa and Madagascar; 1 species in South Africa, recorded from the Transvaal, Swaziland, Zululand, and Natal. (Type: *C. undulaefolia* Salisb.)

8007 23. ASYSTASIA Blume, *Bijdr.*, p. 796 (1826)

Calyx longer or shorter than the corolla-tube, 5-partite almost to the base, usually hairy; segments lanceolate, linear-lanceolate, or linear-spathulate. *Corolla* 5-lobed or subbilabiate, usually hairy; tube cylindric or funnel-shaped; lobes ovate or oblong. *Stamens* 4, didymous, affixed in pairs in the lower part of corolla-tube or deep in the corolla-throat, usually included; filaments linear; anthers 2-theous, with the thecae parallel, sometimes muticous at the base. *Disc* saucer-shaped or swollen. *Ovary* ovate or oblong in outline, 2-chambered, with 2 ovules in each chamber, glabrous or hairy; style terete, included, sometimes hairy; stigma of 2 small fleshy lobes or of 2 ovate subfleshy lobes, or of 2 (or 1) linear lobes. *Fruit* a capsule on top of a solid stalk, flattened laterally. *Seed* laterally compressed, irregularly obovate, with a more or less distinct groove round the margin, tuberculed; testa somewhat leathery; cotyledons obovate; radicle conical, distinct from the cotyledons.

Herbs or shrubs; leaves opposite, entire or often wavy or irregularly toothed on the margin; inflorescence a spike or panicle; bracts usually small; bracteoles minute or 0, rarely longer than the calyx.

Described species 68, natives of Africa, India, China, Malaya and Australia; 7 species recorded from South Africa and found in the northern Transvaal, Zululand, Pondoland, to the Kingwilliamstown and Fort Beaufort districts; one record from the Ceres district. (Type: *A. intrusa* Blume)

8022 24. RUSPOLIA Lindau in *Ann. Instit. Bot. Roma*, vol. 6, p. 79 (1896)

Calyx much shorter than the corolla-tube, 5-partite almost to the base, hairy, sometimes glandular; segments linear. *Corolla* 5-lobed; tube long-cylindric, glandular on the lower portion; lobes much shorter than the tube,

oblong. *Stamens* 2, affixed in the throat of the corolla, exserted; filaments linear; anthers 1-theccous. *Disc* cupular. *Ovary* ellipsoid, 2-chambered, with 2 ovules in each chamber; style filiform, exserted; stigma minutely 2-lobed. *Fruit* a capsule, club-shaped, on a long stalk. *Seed* semi-orbicular, compressed, unequally bilobed at the base, with a somewhat thickened margin, smooth, sometimes with a bold pattern on the inner surface.

Shrubs; leaves opposite, shortly petioled, ovate, acuminate; inflorescence a spike or panicle; bracts and bracteoles present.

An African genus of 4 species, one of which is found in the northern Transvaal. (Type: *R. pseuderanthemoides* Lindau)

8026 25. PERISTROPHE Nees in Wallich. Pl. As. Rar., vol. 3, p. 112 (1832)

Calyx shorter than or as long as the corolla-tube, 5-partite nearly to the base, hairy; tube when present shallowly campanulate; segments linear or linear-lanceolate, acuminate. *Corolla* 2-lipped, hairy; tube cylindric or tubular below, somewhat campanulate above, sometimes pilose within; upper lip entire or emarginate; lower lip entire or 3-toothed or shortly 3-lobed. *Stamens* 2, affixed in the corolla-throat, exserted; filaments linear, scantily hairy; anthers 2-theccous, with 1 theca much above the other. *Disc* cupular. *Ovary* ellipsoid, 2-chambered, with 2 ovules in each chamber; style filiform, exserted; stigma of 2 short linear lobes. *Fruit* a capsule, on a cylindric stalk, 4-seeded. *Seeds* discoid, smooth or minutely papillose.

Herbs or shrubs, sometimes scrambling, sometimes decumbent and rooting at the nodes; leaves opposite, entire; inflorescence a panicle of spikelets; bracts linear to ovate, enclosing the calyx; bracteoles 2 to each flower, linear-lanceolate.

Described species about 25, found in Africa, Madagascar, east India, China, and the Malay Archipelago; 5–6 species in South Africa, recorded from the northern Transvaal, the Orange Free State, and the coastal area to the Uitenhage district; also recorded from the Albany and Queenstown districts and from South West Africa. (Type: *P. acuminata* Nees)

8030 26. MACRORUNGIA C. B. Cl. in Flor. Trop. Afr., vol. 5, p. 254 (1900)

(*Himantochilus* T. Anders. partly)

Calyx much shorter than the corolla-tube, 5-lobed to about the middle or nearly to the base, hairy or glabrous; tube (when present) campanulate; lobes lanceolate, sometimes acuminate. *Corolla* 2-lipped, sometimes glandular or hairy without and within, or glabrous; tube long funnel-shaped or tubular; posticous lip linear-oblong, emarginate, with a channel which runs down almost to the base of the corolla-tube and the flaps sometimes ending at the base in 2 blunt hairy projections; anticous lip shortly 3-lobed or with 3 long oblong or linear-oblong lobes. *Stamens* 2, affixed in the mouth of the corolla-tube, exserted; filaments broadly linear; anthers 2-theccous, with one theca above the other. *Disc* saucer-shaped. *Ovary* ovate in outline, 2-chambered, with 2 ovules in each chamber; style filiform, lying in the channel on the corolla-tube and upper lip, exserted, sometimes hairy at the base; stigma simple or faintly 2-lobed. *Fruit* an ovoid capsule. *Seeds* with obscure ridges.

Shrubs with glabrous or densely tomentose branches; leaves large, opposite, usually elliptic, narrowing into a petiole; inflorescence a strobilate spike; bracts usually ovate, with membranous margins; bracteoles narrow or 0.

An African genus of 6 or 7 species; 2 or 3 species in South Africa, recorded from the northern Transvaal and the East London district. (Type: *M. pubinervia* (T. Anders.) C. B. Cl.)

8031 27. DICLIPTERA Juss. in Ann. Mus. Paris, vol. 9, p. 267 (1807)

Calyx shorter than the corolla-tube, 5-partite almost to the base, hairy, sometimes glandular; segments linear-lanceolate, acuminate. *Corolla* bilabiate, often hairy on the upper part; tube cylindric or tubular below, sometimes campanulate above, with 2 distinct longitudinal ridges within which are usually hairy; upper lip entire or emarginate; lower lip shortly 3-lobed. *Stamens* 2, affixed in the corolla-mouth, exserted; filaments linear, glabrous, or hairy, or with glandular hairs; anthers 2-theous, with one theca above the other. *Disc* cupular. *Ovary* ovoid, 2-chambered, with 2 ovules in each chamber; style filiform, exserted; stigma of 2 linear lobes. *Fruit* an ovoid capsule, 2—4-seeded. *Seeds* discoid, dotted with glochidiate tubercles which are sometimes elongated or sometimes shortened to warts or 0.

Herbs; leaves opposite, petioled, entire; inflorescence a spike of 2 to 1, rarely 3, flowers, massed in heads or scattered; bracts equal or unequal, ovate, ovate-elliptic, broadly elliptic, or lanceolate, sometimes apiculate, hairy; bracteoles linear or linear-lanceolate, narrower than the bracts, often glandular.

Described species 176, found in the tropical and subtropical regions of both hemispheres, probably not all belonging to this genus; 10 or 12 species in South Africa, recorded from the Transvaal, Zululand, Natal, the Orange Free State, through the coastal districts to East London; also recorded from the Kimberley district and South West Africa. (Type: *D. acuminata* Juss.)

8032 28. HYPOESTES Soland. ex. R. Br., Prodr., p. 474 (1810)

Calyx much shorter than the corolla-tube, 5-lobed or deeply 5-lobed, or 5-partite almost to the base, glabrous; tube campanulate or tubular; lobes lanceolate, acuminate, sometimes shorter than the tube. *Corolla* bilabiate, hairy and sometimes also glandular; tube cylindric, subcampanulate above usually with 2 long hairy ridges within; anterior lip 3-lobed; posterior lip 2-fid, emarginate, or entire. *Stamens* 2, affixed in the mouth of the corolla-tube, exserted; filaments linear, sometimes hairy; anthers 1-theous. *Disc* cupular, lobed, sometimes with 2 long awns. *Ovary* ovate in outline, 2-chambered, with 2 ovules in each chamber; style filiform, exserted; stigma 2-lobed. *Fruit* a stalked capsule, 2—4-seeded. *Seed* flattened, orbicular or ovate, with a very narrow membranous wing, smooth; cotyledons semi-orbicular; radicle linear, curved, lying on the edge of the cotyledons.

Herbs or shrubs; leaves entire, often wavy on the margins; inflorescence a terminal and axillary cyme of spikelets, and the spikelet containing one flower and a rudiment of a second; bracts 2, free or united into a tube.

Described species 186, natives of Africa, the Mascarene Islands, Australia and the Philippine Islands, east India, China, and the Malay Archipelago; 6 species in South Africa, extending from the Transvaal and Natal, through the coastal belt to the Caledon district; also recorded from the Orange Free State, Bechuanaland, and the Somerset East district. (Type: *H. floribunda* R. Br.)

8039 29. MACKAYA Harv., Thes. Cap., vol. 1, p. 8, t. 13 (1859)

Calyx much shorter than the corolla-tube, 5-partite almost to the base, hairy; segments linear-lanceolate, acuminate. *Corolla* 5-lobed, scarcely 2-lipped, hairy below; tube cylindric below, campanulate above; lobes ovate or oblong. *Stamens* 2, affixed at the base of the campanulate portion of the corolla-tube, subincluded; filaments linear; anthers 2-theous, hairy on the back; staminodes 2, without anthers. *Disc* obsolete. *Ovary* subellipsoid, 2-chambered, with 2 ovules in each chamber; style terete, subglabrous or hairy below; stigma 2-lobed. *Fruit* ellipsoid, on a long woody stalk. *Seeds* 2; somewhat ovate, unequal at the base, rugose, with prominent folds;

cotyledons ovate or semi-orbicular; radicle terete, differentiated from the cotyledons.

A shrub, leaves opposite, petioled, elliptic or elliptic-lanceolate, acuminate; inflorescence a terminal lax raceme; bracts 2, subulate; bracteoles 2, at the base of the pedicels.

Endemic; species 1, recorded from the northern Transvaal, Swaziland, Zululand, Natal, and Pondoland. (Type: *M. bella* Harv.)

8048 30. ECBOLIUM Kurz in Journ. Asiat. Soc. Bengal, vol. 40, p. 7, 75 (1871)

Calyx much shorter than the corolla-tube, 5-partite almost to the base or 5-lobed, hairy; segments linear or linear-lanceolate, somewhat unequal; tube, when present, campanulate. *Corolla* deeply bilabiate, sometimes hairy; tube cylindric or narrowly funnel-shaped, sometimes hairy within; lower lip deeply 3-lobed, with the lobes ovate or oblong; upper lip bifid or subentire. *Stamens* 2, affixed deep in the corolla-throat, exserted; filaments linear; anthers 2-theous. *Disc* annular. *Ovary* ellipsoid, 2-chambered, with 2 ovules in each chamber, glabrous or hairy; style terete, somewhat exserted, glabrous or hairy on the lower portion; stigma minutely 2-lobed. *Fruit* an ovoid capsule, 2-seeded, on a solid stalk. *Seeds* irregularly obovate, with a very narrow membranous wing, with irregular slightly raised ridges, setose, papillose or smooth; cotyledons obovate; radicle conical.

Glabrous or hairy shrubs; leaves opposite, entire; inflorescence a many-flowered terminal spike; bracts ovate or obovate; bracteoles 2, linear.

Species 17, natives of Africa, Madagascar, and India; 3—4 species in South Africa, recorded from the northern Transvaal, Natal, the Komgha and East London districts. (Type: *E. linneanum* (Linn.) Kurz)

8049 31. SIPHONOGLOSSA Oerst. in Kjoebenhavn. Vid. Meddel., p. 159 (1854)

Calyx much shorter than the corolla-tube, 4—5-partite almost to the base, glabrous or hairy; segments linear-lanceolate. *Corolla* bilabiate, glabrous or hairy; tube cylindric; upper lip entire or 2-fid; lower lip 3-lobed. *Stamens* 2, affixed in the mouth or throat of the corolla-tube, exserted; filaments linear, anthers 2-theous, with one theca inserted above the other and thecae shortly pointed at the base. *Disc* saucer-shaped or cup-shaped. *Ovary* more or less ellipsoid, 2-chambered, with 2 ovules in each chamber; style terete, exserted; stigma slightly 2-lobed. *Fruit* a capsule seated on a long woody stalk, oblong in outline, sometimes beaked, with 4 or fewer seeds, sometimes hairy. *Seeds* obovate, papillose; cotyledons orbicular; radicle terete, curved, lying on the edge of the cotyledons.

Shrubs or shrubby herbs or undershrubs, with diffuse stems; leaves opposite, petioled, entire; flowers axillary and solitary; bracts and bracteoles present.

Species 15, natives of Africa and America; 3 species recorded from South Africa and found in the northern Transvaal, through the coastal area to the Alexandria district; also recorded from the Queenstown district. (Type: *S. ramosa* Oerst.)

8054 32. RHINACANTHUS Nees in Wallich. Pl. As. Rar., vol. 3, p. 76 (1832)

Calyx shorter than the corolla-tube, 5-lobed almost to the base, glandular with stalked glands or hairy; lobes lanceolate-linear. *Corolla* bilabiate, pilose; tube cylindric; posterior lip entire or emarginate. *Stamens* 2, affixed in the mouth of the corolla-tube, exserted; filaments linear; anthers 2-theous,

with one theca situated above the other. *Disc* cup-shaped. *Ovary* more or less ellipsoid, 2-chambered, with 2 ovules in each chamber, hairy; style filiform exserted; stigma shortly 2-lobed. *Fruit* a capsule, oblong in outline, on a long woody stalk, 4-seeded, hairy. *Seed* suborbicular or transversely oblong, papillate; cotyledons conforming to the shape of the seed, with a concave depression on one side; radicle terete, curved, lying on the edge of the cotyledons.

Scrambling herbs; leaves opposite, petioled, entire, with the margins obscurely undulate-crenate; inflorescence a panicle, with the flowers in sessile distant clusters on the branches of the panicle; bracts and bracteoles small, linear.

Described species 22, natives of Africa, Madagascar, India, Malaya, China, and America; 2 or 3 species in South Africa, ranging from the northern Transvaal, Natal, and the coastal area to the East London district. (Type: *R. communis* Nees)

8055 **33. DUVERNOIA** E. Mey., in DC. Prodr., vol. 11, p. 322 (1847)

Calyx shorter than the corolla-tube, glabrous; tube campanulate; lobes ovate, subacuminate, shorter than the tube. *Corolla* bilabiate, minutely pubescent; tube subcampanulate, shorter than the lips, with 5 hairy plates within; posterior lip shortly bilobed; anterior lip 3-lobed, with the middle lobe oblong and the lateral lobes falcately oblong, with two gibbosities at the base without. *Stamens* 2, affixed in the mouth of the corolla-tube, exserted; filaments terete; anthers 2-theous, with the thecae almost at the same level and one theca with a conical fleshy projection at the base. *Disc* large, fitting like a collar round the lower part of the ovary. *Ovary* subglobose, 2-chambered, with 2 ovules in each chamber, densely hairy; style terete, exserted; stigma obscurely 2-lobed. *Fruit* a club-shaped tomentose capsule, situated on a short stalk. *Seeds* compressed, semi-orbicular, rugose; cotyledons semi-orbicular.

A small tree or large shrub; leaves opposite, large, elliptic, entire; inflorescence a compound terminal spike; bract and bracteoles small.

Described species about 3, 1 of which is found in South Africa and recorded from Zululand, Natal, Griqualand East, and Pondoland. (Type: *D. adhatodioides* E. Mey.)

NOTE.—In the *Flora Capensis* C. B. Clarke mentions that the genus *Duvernoia* might well be maintained. Bearing in mind the small differences which separate other accepted genera in the *Acanthaceae*, I have kept the genus out of *Adhatoda* where it was placed by Clarke.—E. P. P.

8061 **34. MEGALOCHLAMYS** Lindau in Engl. Bot. Jahrb., vol. 26, p. 345 (1898)

Calyx shorter than the corolla, 5-partite almost to the base, scabrous or pubescent; segments linear or linear-lanceolate. *Corolla* bilabiate; tube cylindric, rather shorter than the lips; upper lip ovate-oblong, subentire; lower lip 3-fid. *Stamens* 2, long-exserted; anthers 2-theous, nearly at equal height, with the thecae muticous. *Ovary* glabrous, 2-chambered, with 2 ovules in each chamber; stigma shortly and equally 2-lobed. *Fruit* a subglobose capsule on a short stalk, apiculate at the apex; seed compressed, orbicular, with a narrow membranous marginal wing, setose on both faces, with a curved projection at the base; cotyledons orbicular, rugose; radicle linear, slightly curved.

Shrubs; leaves opposite, entire; floral leaves imbricated, usually with 3 flowers in the axil of the upper; inflorescence terminal and axillary; bracts and bracteoles 0 or represented by bristles.

An African genus of 3 species, 1 of which is found in South West Africa. (Type: *M. marlothii* (Engl.) Lindau)

8063 **35. RUTTYA** Harv. in Hook. London Journ. Bot., vol. 1, p. 27 (1842)

Calyx longer than the corolla, 5-partite to the base, glabrous; segments linear. *Corolla* bilabiate, glabrous or nearly so; tube tubular-campanulate; upper lip emarginate or deeply 2-lobed; lower lip 3-lobed; lobes oblong, about as long as the tube. *Stamens* 2, affixed in the mouth of the corolla, exerted; filaments broadly linear; anthers 1-theous, muticous; staminodes 2. *Disc* swollen. *Ovary* oblong in outline, 2-chambered, with 2 ovules in each chamber; style terete, exerted, scantily hairy on the lower part; stigma minutely 2-lobed. *Fruit* a club-shaped capsule on a long stalk. *Seed* compressed, elliptic, with a projection on one side at base, smooth.

A small glabrescent shrub; leaves opposite, petioled, entire; inflorescence dense, of abbreviated cymes; bracts and bracteoles small, linear.

An African genus of 3 species; 1 species in South Africa, found in the northern Transvaal, Swaziland, Natal, and Pondoland. (Type: *R. ovata* Harv.)

8079 **36. ISOGLOSSA** Oerst. in Kjoebenhavn. Vid. Meddel., p. 155 (1854)

Calyx about as long as the corolla-tube, more rarely much shorter, 5-partite almost to the base, hairy or glandular with stalked glands; segments lanceolate. *Corolla* bilabiate, glabrous or hairy; tube subcampanulate and shorter than the lips and with a pilose band within near the base, more rarely the tube long-cylindric; upper lip very shortly 2-lobed; lower lip shortly 3-lobed, usually with a distinct keel on the back and 2 raised ridges on the palate. *Stamens* 2, affixed near the base of the corolla-tube or in the cylindric upper portion of the corolla-tube, subexserted; filaments terete; anthers 2-theous, with one theca very much above the other. *Disc* saucer-shaped or a thickened ring. *Ovary* ellipsoid, 2-chambered, with 2 ovules in each chamber, glabrous; style terete, subexserted or long filiform and exerted; stigma faintly 2-lobed. *Fruit* an ellipsoid capsule. *Seeds* more or less quadrate in outline and thickened or compressed and oblong, rugose; cotyledons thick, orbicular; radicle conical.

Herbaceous shrubs, more rarely woody; leaves opposite, ovate or elliptic, usually petioled; inflorescence a panicle; floral leaves and bracts small or lanceolate or spatulate-obovate, sometimes enclosing the calyx.

Described species 52, but possibly not all belonging to this genus, natives of Africa, the Mascarene Islands, and India; 15 species in South Africa, extending from the northern Transvaal, Basutoland, Natal, through the coastal area to the Uitenhage district. (Type: *I. ciliata* Oerst.)

8094 **37. JUSTICIA** Linn., Sp. Pl., ed. 1, p. 15 (1753)

Calyx shorter or longer than the corolla-tube, usually 5-partite to the base, more rarely 4-partite, hairy or glandular, with stalked glands; segments lanceolate or linear-lanceolate, more rarely elliptic, sometimes acuminate. *Corolla* bilabiate, hairy, sometimes glandular; tube subcampanulate or broadly tubular, about as long as the lips, sometimes with 2 hairy plates within, usually with a band of hairs within near the base; upper lip emarginate or shortly 2-lobed or entire; lower lip 3-lobed, with the lobes ovate and oblong and usually pinnately ribbed on the palate. *Stamens* 2, affixed deep in the corolla-throat, slightly exerted; filaments linear, often hairy at the base; anthers 2-theous, with one theca distinctly above the other and the lower theca tailed, very rarely thecae at almost equal levels and the lower theca mucronate or without any projection, often hairy. *Disc* saucer-shaped or cup-like. *Ovary* ellipsoid or ovoid, 2-chambered, with 2 ovules in each

chamber, glabrous or slightly hairy above; style terete, subexserted, sometimes hairy at the base; stigma distinctly or faintly 2-lobed. *Fruit* an ellipsoid or club-shaped capsule on a short woody stalk, 4-seeded, glabrous or hairy. *Seed* usually orbicular, muricate, tubercled, or ribbed; cotyledons transversely oblong or orbicular, rarely with one cotyledon partly folded over the other; radicle small, curved, lying on the edge of the cotyledons.

Herbs or shrubs; leaves opposite, petioled or sessile, entire or obscurely wavy; inflorescence a strobilate spike, cymose, or flowers axillary and solitary or 2—3 together; bracts large and ovate, more usually narrow; bracteoles generally small and narrow.

Described species between 200 and 300, but probably not all belonging to the genus; between 30 and 40 species in South Africa, ranging from the northern Transvaal through Natal and the coastal area to the Uitenhage district; also recorded from a few central and north-western districts of the Cape Province and South West Africa. (Type: *J. hyssopifolia* Linn.)

8094a 38. MONECHMA Hochst. in Flora, vol. 24, p. 374 (1841)

Calyx as long as or rarely shorter than the corolla-tube, usually 5-partite to the base, more rarely 4-partite, usually glandular with stalked glands, more rarely pubescent; segments lanceolate and acuminate or lanceolate-linear or oblong-lanceolate and obtuse. *Corolla* bilabiate, hairy; tube broadly tubular, about as long as the lips; upper lip entire, sometimes truncate or emarginate; lower lip 3-lobed, with the middle lobe pinnately ribbed. *Stamens* 2, affixed in the mouth of the corolla-tube, subincluded; filaments linear; anthers 2-theous, with one theca above the other and the lower theca tailed. *Disc* saucer-shaped. *Ovary* more or less ellipsoid; 2-chambered, with 1—2 ovules in each chamber, glabrous or hairy; style terete, included; stigma faintly 2-lobed. *Fruit* a subglobose capsule, 2-seeded, glabrous or hairy. *Seed* compressed, orbicular, smooth, very rarely with a tuft of rigid hairs at either end; cotyledons elliptic; radicle conical, curved.

Usually small woody bushes, variously hairy or glabrous; leaves opposite, variously shaped, entire; inflorescence a spike or flowers solitary; bracts and bracteoles small, more rarely bract ovate and/or bracteoles absent.

An African genus of about 60 species; 1 species recorded from India; 23 species in South Africa but not all described, found in South West Africa, Namaqualand, Bechuanaland, the north-western districts of the Cape Province, the northern Transvaal, Swaziland, Natal, the Orange Free State, and one record from the Port Elizabeth district. (Type: *M. bracteatum* Hochst. = *M. debile* (Forsk.) Nees)

8094b 39. ADHATODA Nees in Wallich. Pl. As. Rar., vol. 3, p. 102 (1832)

Calyx almost as long as or as long as the corolla, 5-partite almost to the base, hairy; lobes linear or lanceolate-linear, acuminate. *Corolla* bilabiate, hairy; tube subcampanulate, shorter than the lips, pilose within; upper lip very shortly bilobed or nearly entire; lower lip 3-lobed, with the middle lobe ovate and the lateral lobes oblong, with 2 cavities at the base without. *Stamens* 2, affixed deep in the corolla-throat, exserted; filaments linear; anthers 2-theous, with one theca slightly above the other, with a fleshy projection from the base of the thecae. *Disc* cup-shaped. *Ovary* ovate in outline, 2-chambered, with 2 ovules in each chamber; style linear, exserted, hairy on the lower portion; stigma simple and faintly 2-lobed. *Fruit* a 2—4-seeded capsule on a short solid stalk; seeds rugose, sometimes obscurely so.

Stout shrubs, often hairy; leaves large, usually narrowed at each end, usually elliptic, entire; inflorescence terminal, of many flowers collected in compound oblong or capitate heads; bracts ovate or linear-oblong; bracteoles 2, about as long as the calyx.

Described species 100, but not all belonging to the genus *Adhatoda*; 3 species in South Africa, recorded from the northern Transvaal, Natal, and Griqualand East.

8096 40. ANISOTES Nees in DC. Prodr., vol. 11, p. 424 (1847)

Calyx very much shorter than the corolla-tube, 5-partite almost to the base, usually 3-nerved, hairy; segments ovate-lanceolate. *Corolla* bilabiate, hairy; tube tubular, shorter than the lips, with a distinct keel and 2 channels under the lower lip, and with a deep groove under the lower lip, sometimes with a pilose band within near the base; upper lip erect, concave, emarginate; lower lip linear, shorter than the upper lip, shortly or deeply 3-lobed. *Stamens* 2, affixed near the base of the corolla-tube, exserted; filaments linear, sometimes adnate to the corolla-tube almost to the mouth; anthers 2-theous, with one theca slightly below the other, mucous at the base. *Disc* saucer-shaped. *Ovary* ovoid, 2-chambered, with 2 ovules in each chamber, glabrous or densely hairy; style terete; stigma shortly 2-lobed. *Fruit* not seen, but in one species the seed is described as scabrous, almost tubercular on the margins.

Shrubs; leaves opposite, entire; inflorescence a dense spike or the flowers axillary and clustered; bracts very small.

Species 15, mostly natives of Africa, also recorded from Arabia and Madagascar; 2 species found in South Africa and recorded from the northern Transvaal and the Kuruman and Prieska districts. (Type: *A. triculum* Nees)

NOTE.—In a specimen of *A. rogersi* Sp. M. collected by E. G. Bryant near Prieska, the leaves and base of calyx give out a white fluid after being boiled and cut. In no other specimen of the *Acanthaceae* examined by me have I noticed such exudation of a milky juice.—E. P. P.

8099 41. AULOJUSTICIA Lindau in Engl. Bot. Jahrb., vol. 24, p. 324 (1898)

Calyx much shorter than the corolla-tube, 5-partite almost to the base, sparsely hairy; segments long-linear, acuminate. *Corolla* bilabiate, glandular with stalked glands; tube long narrow cylindric; upper lip linear-oblong, entire; lower lip 3-lobed, with the middle lobe ovate and the lateral lobes oblong. *Stamens* affixed in the throat of the corolla-tube, exserted; filaments broadly linear; anthers 2-theous, with one theca distinctly above the other and the lower theca tailed. *Disc* cup-shaped. *Ovary* ellipsoid, 2-chambered with 2 ovules in each chamber, glabrous; style long-filiform, exserted; stigma simple. *Fruit* not seen.

A subherbaceous bush, with long simple stems from a woody rootstock; leaves opposite, linear, entire; flowers solitary in the axils of the 2—3 upper leaves; bracts linear.

Endemic; species 1, only recorded from the Barberton district in the Transvaal. (Type: *A. linifolia* Lindau)

172. MYOPORACEAE

Flowers bisexual, irregular or nearly regular. *Calyx* 5-partite or 5-lobed. *Corolla* gamopetalous; tube short and somewhat campanulate, or elongate and infundibuliform or tubular; limb subequal, oblique or bilabiate, 5- (or rarely 6-) lobed; lobes imbricate, with the two posticous lobes often exterior, sometimes deeply connate. *Stamens* 4, didymous or subequal, rarely as many as the corolla-lobes, inserted on the corolla and alternating with its lobes, included or exserted; filaments filiform or thickened at the base, sometimes shorter than the anthers; anthers normally 2-theous, with the thecae at first parallel, afterwards diverging from the confluent apex, dehiscing longitudinally. *Disc* hypogynous, small or nearly obsolete. *Ovary* superior, 2-chambered or more or less perfectly 3—10-chambered by the

intrusion of septa between the ovules, with 3—8 ovules in each chamber or ovules solitary in each chamber when ovary is 3—10-chambered; style simple, terminal, short or somewhat elongated, terete and stout, or filiform; stigma terminal, small, entire or obscurely emarginate, rarely oblique. *Fruit* drupaceous, indehiscent; exocarp fleshy, succulent or rarely dry; endocarp hard or thin, 2-locular or the loculi as numerous as the seeds, rarely breaking up into pyrenes. *Seeds* 2—10, usually solitary, in the loculi arranged in one series round the axis, very rarely superposed; testa membranous; embryo straight or slightly curved, sometimes minute; cotyledons semi-terete, slightly broader and shorter (rarely longer) than the radicle, sometimes the 2 cotyledons hardly differentiated; radicle terete, sometimes almost indistinguishable from the cotyledons; endosperm fleshy, slender or nearly absent.

Erect or diffuse herbs, shrubs, or rarely trees, glabrous, tomentose, canescent, lepidote or pubescent; leaves alternate or rarely opposite, entire or rarely dentate; stipules 0; flowers axillary, solitary or fascicled, subsessile or pedicellate; bracts small or absent.

Genera 6; species about 80, mostly Australian, with a few Polynesian representatives; 1 species in the Sandwich Islands, 1 in Mauritius, 2 in China and Japan, and 1 in the West Indies; a doubtful record from tropical Africa; 3 species in South Africa.

8114 *OFTIA* Adans., Fam., vol. 2, p. 199 (1763)

Calyx slightly shorter than the corolla-tube, 5-partite to the base, glandular, with stalked glands; segments linear. *Corolla* 5-lobed; tube tubular or cylindric, sometimes dilated at the throat, sometimes covered with whitish sessile glands, pilose within and villous in the throat; lobes much shorter than the tube, oblong, obovate, sometimes truncate and crenate. *Stamens* 4, subequal, affixed about the middle of the corolla-tube, included; filaments shorter than the anthers; anthers 2-theous, oblong. *Disc* 0. *Ovary* 2-chambered, with 3—6 ovules in each chamber; style stout, terete, included; stigma fleshy, oblique. *Drupe* small, globose, succulent. *Seeds* 1—3; embryo minute, not nearly filling the seed; cotyledons jointed and emarginate at the apex; radicle hardly distinguishable from the cotyledons.

Villous or sometimes viscid-pubescent much-branched shrubs; leaves alternate or the lower opposite or somewhat verticillate, sessile, ovate or ovate-lanceolate, sometimes revolute, usually with blunt spines on the margins; flowers sessile or shortly pedicelled in the axils of the upper leaves; bracts 0.

Endemic; species 2, distributed from Namaqualand, through the coastal area to the Riversdale district. (Type: *O. africana* (L.) Bocq.)

173. PLANTAGINACEAE

Flowers regular, usually bisexual. *Calyx* 4-partite; segments imbricate. *Corolla* gamopetalous, scarious, marcescent; tube ampulliform or cylindric, 4-lobed, equal, spreading. *Stamens* usually 4, inserted on the corolla-tube, usually exserted; filaments filiform; anthers versatile, 2-theous, dehiscent by a long slit. *Disc* 0. *Ovary* superior, 2-chambered or spuriously 3—4-chambered, with 1 to many ovules in each chamber; style filiform; stigma simple. *Fruit* a capsule, sometimes indehiscent. *Seeds* solitary or many; embryo straight or curved; cotyledons oblong or linear; radicle short or as long as the cotyledons; endosperm fleshy.

Perennial or annual herbs, caulescent or acaulescent; leaves often radical; inflorescence a spike; flowers small, each subtended by a bract.

Genera 3; species between 200 and 300, cosmopolitan, chiefly in temperate and subtropical regions.

8116

PLANTAGO Linn., Sp. Pl., ed. 1, p. 112 (1753)

Flowers bisexual or polygamo-dioecious. *Calyx* about as long as the corolla-tube, 4-partite to the base; segments lanceolate, sometimes 2 segments obovate and 2-ribbed and the other 2 concave keeled and ciliate on the upper part of keel; usually with membranous margins. *Corolla* 4-lobed, somewhat scarious; tube campanulate-tubular or urceolate; lobes lanceolate or ovate, shorter than the tube. *Stamens* 4, affixed in the mouth of the corolla-tube, alternating with the corolla-lobes, exserted; filaments filamentous; anthers 2-theous, oblong, minutely apiculate. *Disc* 0. *Ovary* globose, normally 2-chambered, with 1 to several ovules in each chamber; style usually much-exserted and villous, more rarely included; stigma simple. *Fruit* a membranous capsule, circumscissily dehiscent at the middle or near the base. *Seeds* 2 to several, more rarely seed solitary, oblong in general outline, usually convex on the back or flat with a broad groove on the face, sometimes triangular in cross-section, usually smooth, rarely ribbed with wavy ridges, gelatinous when wetted; embryo straight or curved; cotyledons oblong or linear, sometimes linear in outline and triangular in cross-section; radicle thick, terete, as long as or longer than the cotyledons; endosperm scanty, fleshy or cartilaginous.

Annual or perennial herbs, often stemless; leaves normally in a radical rosette, various in shape, usually entire; inflorescence a spike or head, with inconspicuous flowers; bracts present, each flower being subtended by a bract.

A cosmopolitan genus with between 200 and 300 described species; about 10 species in South Africa, fairly generally distributed. (Type: *P. major* L.)

174. RUBIACEAE

Flowers bisexual, rarely unisexual, usually regular. *Calyx* obsolete, cup-like or tubular, entire, toothed, or lobed, sometimes 1 or more of the lobes produced and foliaceous. *Corolla* gamopetalous, 4—10-lobed, glabrous or hairy; tube campanulate, funnel-shaped, tubular, rarely urceolate or saucer-shaped, often villous in the throat, sometimes with a ring of reflexed hairs within or variously hairy within; lobes normally equal, very rarely unequal or 2-lipped, shorter or longer than the tube, often reflexed, valvate, imbricate or contorted in bud. *Disc* various, sometimes obsolete. *Stamens* usually equalling the corolla-lobes and alternating with them, very rarely fewer; inserted in the mouth, throat, or deeper in the corolla-tube, exserted or included; filaments shorter or longer than the anthers, sometimes 0; anthers 2-theous, usually opening by longitudinal slits, often apiculate, sometimes sagittate at the base, sometimes hairy. *Ovary* inferior or $\frac{1}{2}$ -inferior, 1—10-chambered, very often 2-chambered, with 1 to many ovules in each chamber; style various, included or exserted, simple or styles 2 to more; stigma various. *Fruit* a drupe, berry, or capsule, indehiscent or breaking up into cocci. *Seed* various; embryo small or large in relation to the size of the seed, usually straight, sometimes curved; endosperm fleshy or horny, very rarely 0.

Herbs, shrubs, or trees, sometimes prickly or spiny; leaves simple, opposite or whorled, usually entire, sessile or petioled; stipules various, usually between the leaves, often adnate to the petioles or base of the leaves, sometimes resembling the leaves, united in pairs; inflorescence various.

Genera about 400; species between 5,000 and 6,000, found in all parts of the world, especially abundant in tropical countries.

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|---|-----|-----|-----|-----|-----|---|
| 1. Leaves and leaf-like stipules in whorls | ... | ... | ... | ... | ... | 2 |
| Stipules various, but not resembling the leaves | ... | ... | ... | ... | ... | 3 |

2. Flowers normally tetramerous, occasionally corolla 5-lobed and stamens 5 46. *Galium* Linn.
 Flowers normally pentamerous, occasionally corolla 4-lobed and stamens 4 47. *Rubia* Linn.
3. One or two of the calyx-lobes much enlarged, usually in fruiting stage, and coloured 4
 Calyx-lobes not produced but, if produced, then not coloured 5
4. Ovules many in each ovary-chamber 7. *Mussaenda* Linn.
 Ovule solitary in each ovary-chamber 18. *Alberta* E. Mey.
5. One or more of the calyx-lobes foliaceous 6
 Calyx-lobes various but none produced and foliaceous 10
6. Ovary 5-chambered 7
 Ovary 2—3-chambered 8
7. Leaves paler on the under surface; inflorescence dichotomously branched 26. *Lagynias* E. Mey.
 Leaves not paler on the under surface; inflorescence a simple axillary cyme of flowers fascicled 30. *Pachystigma* Hochst.
8. Ovules many in each ovary-chamber 3. *Pentas* Benth.
 Ovule solitary in each ovary-chamber 9
9. Stipules 3—5-fid or of 3—5 setae ... 19. *Pentanisia* Harv.
 Stipules lanceolate, foliaceous ... 40. *Otiophora* Zucc.
10. Calyx-tube "fur"-lined 13. *Rothmannia* Thunb.
 Calyx-tube not as above 11
11. Sepals with short fleshy setae at the base 8. *Leptactinia* Hook. f.
 Sepals without setae at the base 12
12. Stigma lobes with short wavy longitudinal membranous wings 16. *Kraussia* Harv.
 Stigma various, but not as above 13
13. Seeds with deeply fimbriated margins 4. *Crossopteryx* Fenzl
 Seeds various but not with fimbriated margins 14
14. Ovules several in each ovary-chamber 15
 Ovule solitary, very rarely 2, in each ovary-chamber 23
15. Corolla 4-lobed 1. *Oldenlandia* Linn.
 Corolla 5- or more-lobed, occasionally 4-lobed 16
16. Inflorescence a many-flowered terminal head or peduncled head or heads in panicles 17
 Inflorescence cymose, corymbose, racemose, paniced, or flowers solitary 18
17. Heads peduncled 5. *Adina* Salisb.
 Heads sessile 10. *Burchellia* R. Br.
18. Fruit a capsule; stipules with 1 or more awns 19
 Fruit a berry or dry and indehiscent; stipules not awned 20
19. A straggling semi-succulent herb growing in damp places 2. *Pentodon* Hochst.
 Shrubby herbs or small shrubs, not usually found in damp places 3. *Pentas* Benth.

20. Stigma of 2 linear-oblong arms, each on a short stalk
 17. Heinsia DC.
 Stigma usually thickened and shortly 2-lobed 21
21. Calyx usually more than 5-lobed, fleshy; stipules connate
 12. Gardenia Ellis
 Calyx never more than 5-lobed; stipules not connate 22
22. Corolla-tube campanulate, tubular, or subcampanulate above and tubular below **11. Randia Linn.**
 Corolla-tube long-cylindric **14. Oxyanthus DC.**
23. Plants monoecious or dioecious 24
 Flowers all bisexual 29
24. Calyx-lobes as long as or longer than the corolla-tube, sometimes only 1—2 lobes developed 25
 Calyx-lobes very short or calyx truncate or not developed above the ovary 27
25. Corolla normally 4-lobed, occasionally 2—3- or 5-lobed, lobes pilose on the inner face **44. Spermacoce Gaertn.**
 Corolla 5-lobed; lobes not pilose 26
26. Corolla glabrous; tubes narrowly funnel-shaped or cylindric
 38. Carpacoe Sond.
 Corolla pilose; tube campanulate **39. Crocyllis E. Mey.**
27. Stipules minute or 0 **37. Nenax Gaertn.**
 Stipules evident 28
28. Inflorescence a lax panicle **35. Galopina Thunb.**
 Flowers solitary, rarely panicle but then panicle not lax
 36. Anthospermum Linn.
29. A subsucculent creeping herb found on the sea-shore
 42. Hydrophylax Linn. f.
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33. A shrub with the branchlets ending in spines
 39. Crocyllis E. Mey.
 Erect herbs **44. Spermacoce Gaertn.**
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 43. Borreria G. F. Mey.

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8136 1. OLDENLANDIA Linn., Sp. Pl., ed. 1, p. 119 (1753)
(*Hedyotis* Linn.)

Calyx shorter than or about as long as the corolla, 4-lobed, persistent; sepals ovate, apiculate or acuminate, sometimes setose without and papillate within. *Corolla* 4-lobed; tube very short and collar-like or cylindric, funnel-shaped, campanulate or salver-shaped, often pilose or bearded in the throat; lobes oblong or ovate, rarely linear, longer or shorter than the tube. *Stamens* 4, affixed in the mouth of the corolla-tube or in upper part of corolla-tube, included or exserted; filaments linear, about as long as or shorter than the anthers; anthers oblong or linear, sometimes subsessile. *Disc* sometimes fleshy, small or 0. *Ovary* 2-chambered, with many (rarely few or 1) ovules in each chamber; style terete, included or subexserted; stigma bifid. *Fruit* a small capsule or separating into 2 indehiscent cocci. *Seeds* numerous or few, oblong in outline, usually triangular in cross-section, reticulated; embryo straight, minute.

Herbs, shrubs, or undershrubs; leaves opposite, very rarely 3-nate, lanceolate or linear, often small; stipules acute, sometimes acuminate, often setose; inflorescence a lax or dense terminal or axillary cyme or a dichotomous panicle, very rarely flowers solitary.

Species about 300, found in almost all tropical countries; 39 species in South Africa with a fairly general distribution. (Type: *O. corymbosa* Linn.)

8145 2. PENTODON Hochst., in Flora, vol. 27, p. 552 (1844)

Calyx shorter than the corolla-tube, 5-lobed, persistent; tube shallowly campanulate; lobes lanceolate. *Corolla* 5-lobed; tube funnel-shaped, densely villous within; lobes ovate, shorter than the tube, hairy on the face. *Stamens* 5, affixed about the middle of the corolla-tube, included; anthers linear, subsessile. *Disc* 0. *Ovary* 2-chambered, with numerous ovules in each chamber; style terete, exserted, glandular on the lower half; stigmas of 2 linear glandular lobes. *Fruit* a capsule, ovato-globose, smooth. *Seeds* not seen.

A straggling semi-succulent herb, growing in damp places; leaves lanceolate, subacuminate, acute, entire; stipules ovate, awned; inflorescence a panicle of cymes; bracts subulate.

Species 2 or 3, African, said to occur in the Seychelles Islands and South America; 1 species in South Africa found in the northern Transvaal and Natal. (Type: *P. decumbens* Hochst.)

NOTE.—The plant described in *Flora Capensis*, vol. 3, p. 12, as *Hedyotis pentamera* Hochst. belongs to this genus.—E. P. P.

8154 3. PENTAS Benth. in Bot. Mag., t. 4086 (1844)

Calyx much shorter than or as long as the corolla-tube, 5-lobed, ribbed at least in the fruit, hairy or glabrous; tube campanulate-turbinate; lobes

unequal, some usually enlarged at least in fruit, linear-oblong, oblong-linear, or ovate. *Corolla* 5-lobed, hairy or glabrous; tube cylindric or more or less funnel-shaped, sometimes campanulate at the top, bearded in the throat, lobes equal or somewhat unequal. *Stamens* 5, included or exserted; filaments linear, sometimes shorter than the anthers; anthers linear or linear-oblong, sometimes subsessile. *Disc* after flowering sometimes produced into a depressed cone. *Ovary* 2—3-chambered, with many ovules in each chamber; style filiform, more or less exserted; stigma of 2 glandular terete lobes or 1-lobed, thickened, and terete. *Fruit* a 2-valved capsule, membranous or coriaceous, many-seeded, with the valves persistent. *Seeds* variously shaped, in general subglobose, often 3-angled, reticulated or honeycombed; embryo small, straight; cotyledons elliptic; radicle stout, terete, about as long as or longer than the cotyledons; endosperm fleshy.

Shrubby herbs or small shrubs; leaves opposite, usually lanceolate or elliptic or linear, usually entire; stipules multipartite, with subulate segments; inflorescence cymose.

Described species 59, nearly all African, 2 or 3 species in Madagascar; 3 species in South Africa, recorded from the northern Transvaal and Natal. (Type: *P. carnea* Benth.)

8212 4. CROSSOPTERYX Fenzl in Endlicher, Nov. Stirp. Dec., p. 45 (1839)

Calyx much smaller than the corolla, 4—6-lobed, softly pubescent; tube broadly tubular; lobes tooth-like, erect, deciduous. *Corolla* 4—6-lobed, hairy without; tube slender, straight; lobes oblong. *Stamens* 4—6, affixed to the throat of the corolla-tube, subexserted; anthers subsessile, lanceolate or oblong, apiculate at the base and apex. *Disc* annular. *Ovary* 2-chambered, with many ovules which are peltately attached; style filiform, exserted; stigma clavate, bilobed. *Fruit* a globose crustaceous capsule, about the size of a pea, 2-locular, with many seeds. *Seeds* elliptic-oblong in outline, convex on both faces, with a deeply fimbriated marginal wing, faintly reticulated; embryo straight; cotyledons elliptic; radicle stout, conical, shorter than the cotyledons; endosperm fleshy, scanty.

A tree up to 25 ft. high; leaves elliptic, shortly petioled, entire, pubescent; stipules subulate; inflorescence a panicle of cymes.

An African genus of 1 species; in South Africa it has been recorded from the northern Transvaal. (Type: *C. febrifuga* (Afzel.) Benth.)

8226 5. ADINA Salisb., Parad. Londin., t. 115 (1807)

Calyx shorter than the corolla-tube, 5-lobed, hairy; lobes broadly linear. *Corolla* 5-lobed, hairy; tube cylindric, 5-ribbed, glandular within; lobes elliptic, concave. *Stamens* 5, affixed in the corolla-throat, included; filaments linear, shorter than the anthers; anthers oblong, sagittate at the base, apiculate at the apex. *Ovary* 2-chambered, with many ovules in each chamber; style terete, long exserted; stigma club-shaped. *Fruit* separating into 2 cocci which are crowned with the persistent calyx-lobes. *Seeds* oblong, winged; cotyledons flat; endosperm copious.

Trees or shrubs; leaves opposite or whorled, shortly petioled, long-lanceolate, entire; stipules ovate or oblong, sometimes acuminate, caducous; inflorescence a peduncled head or a panicle of peduncled heads, with 2 connate bracts on each peduncle; bracts spatulate-linear, subtending the flowers.

Species 30, natives of Africa, Asia, and the Philippine Islands; 1 species found in the northern Transvaal, Swaziland, and Zululand. (Type: *A. globiflora* Salisb.)

8230 6. CEPHALANTHUS Linn., Sp. Pl., ed. 1, p. 95 (1753)

Calyx very much shorter than the corolla-tube, 5-lobed; lobes ovate or oblong. *Corolla* 5-lobed, somewhat fleshy, glabrous; tube long, funnel-shaped, gradually widening from the base upwards, glabrous; lobes ovate, ciliate on the inner face. *Stamens* 5, affixed deep in the corolla-throat, included; filaments linear, shorter than the anthers; anthers linear, bluntly apiculate at the apex, shortly sagittate at the base. *Ovary* 2-chambered, with a solitary pendulous ovule in each chamber; style terete, exserted, gradually thickening upwards into the club-shaped stigma. *Fruit* breaking up into 1-seeded cocci. *Seed* more or less ovate in outline, convex on one side, flat on the other; testa cartilaginous; tegmen stiffly membranous, pitted; embryo straight; cotyledons oblong-ovate, somewhat cartilaginous; radicle conical, very much smaller than the cotyledons.

Small trees or shrubs; leaves opposite, shortly petioled, elliptic or ovate-elliptic, often acuminate, entire; stipules ovate, acuminate; inflorescence a globose head.

Described species 26, found in Africa, India, China, Formosa, and South America; 1 species recorded in South Africa from the northern Transvaal, Swaziland, Zululand, and Natal. (Type: *C. occidentalis* Linn.)

8238 7. MUSSAENDA Linn., Sp. Pl., ed. 1, p. 177 (1753)

Calyx shorter than the corolla-tube, 5-lobed, glabrous or hairy; tube turbinate or ovoid; lobes linear, sometimes acuminate, subacute, in most species one lobe in certain flowers produced into a stalked large dilated coloured lamina. *Corolla* 5-lobed, glabrous or hairy; tube cylindric or tubular, or narrowly funnel-shaped, bearded in the throat, sometimes also villous within. *Stamens* 5, affixed near the base or in the upper part of the corolla-tube, included; filaments very short, linear, shorter than the anthers; anthers long-linear, obtuse or subacute, shortly sagittate at the base, sometimes subsessile. *Disc* annular or tumid. *Ovary* 2-chambered, with many ovules; style terete, subexserted; stigma 2-lobed. *Fruit* usually fleshy and indehiscent, rarely loculicidally dehiscent and dry, often obtusely ribbed, crowned by the calyx-lobes or their remains, 2-locular, with many seeds. *Seeds* small, ellipsoid, reticulated; embryo minute; cotyledons and radicle not visibly differentiated.

Climbing or erect shrubs; leaves opposite, often elliptic, petioled, often acuminate, entire; stipules solitary or geminate, usually deciduous; inflorescence a terminal cyme; bracts and bracteoles deciduous.

Described species 253, natives of Africa, Madagascar, China, the Philippine Islands, Malaya, India, and South America; 1 species recorded from Zululand, but probably introduced. (Type: *M. frondosa* Linn.)

8274 8. LEPTACTINIA Hook. fil., Icon. Pl., t. 1092 (1871)

Calyx much shorter than the corolla-tube, 5-lobed, hairy; tube oblong in outline or campanulate, equalling the ovary, sometimes villous; lobes linear-lanceolate, with short fleshy setae at the base. *Corolla* 5-lobed, hairy; tube long-cylindric, more or less hairy in the throat; lobes lanceolate, shorter than the tube. *Stamens* 5, affixed deep in the corolla-throat, subincluded; anthers long-linear; sometimes acuminate at the apex, sessile. *Ovary* 2-chambered, with many ovules in each chamber; style linear, subincluded, sometimes villous on the upper portion; stigma 2-lobed. *Fruit* ovoid, 2-locular, many-seeded. *Seeds* angular, closely packed together.

Erect branched shrubs of some size; leaves opposite, often lanceolate, shortly petioled; stipules broadly ovate; inflorescence in dense terminal sessile or subsessile cymes.

An African genus of 29 described species; 1 species in South Africa recorded from the northern Transvaal. (Type: *L. mamrii* Hook. f.)

8278 **9. TARENNA** Gaertn., Fruct., vol. 1, p. 139, t. 28 (1788)

Calyx shorter than the corolla-tube, 4—5-lobed, glabrous; lobes oblong, about as long as the tube. *Corolla* 4—5-lobed, glabrous; tube tubular; lobes oblong, concave, about as long as or somewhat shorter than the tube. *Stamens* 4—5, affixed in the corolla-throat, subincluded; filaments linear, shorter than the anthers; anthers long-linear, minutely apiculate at the apex, bluntly sagittate at the base. *Ovary* 2-chambered, with 1 or more ovules in each chamber; style terete, subincluded, glabrous or hairy on the lower portion; stigma long club-shaped, ribbed or stigma 2-lobed. *Fruit* a berry or drupe, 1- to few-seeded. *Seeds* subglobose; embryo small; endosperm fleshy or horny.

Straggling shrubs; leaves opposite, lanceolate, shortly petioled; stipules ovate, deciduous; inflorescence cymose in the axils of the leaves, peduncled, sometimes at the ends of divaricate lateral shoots, sometimes with foliar bracts at the base of the inflorescence; floral bracts present or absent.

Between 130 and 140 species described, natives of Africa, Madagascar, the Seychelles, Asia, and Australia; 1 species in South Africa, recorded from the Barberton district of the Transvaal. (Type: *T. zeylanica* Gaertn.)

8281 **10. BURCHELLIA** R. Br., in Bot. Reg., t. 466 (1820)

Calyx shorter than the corolla-tube, 5-lobed, pubescent within and without; tube campanulate; lobes linear, longer than the tube. *Corolla* 5-lobed, hairy; tube long funnel-shaped, with a ring of villous hairs near the base; lobes ovate, much shorter than the tube. *Stamens* 5, affixed in the upper part of the corolla-tube, included; anthers sessile, linear, with an ovate apical appendage. *Disc* tumid. *Ovary* 2-chambered, with many ovules in each chamber; style terete, subexserted; stigma thick, lanceolate-elliptic, ribbed. *Fruit* a globose berry, 2-locular, many-seeded, crowned with the persistent calyx. *Seed* somewhat compressed, transversely oblong, with more or less whorled ridges; embryo straight; cotyledons suborbicular; radicle stout, terete, longer than the cotyledons; endosperm horny.

A shrub or small tree; leaves opposite, shortly petioled, obovate-oblong, obtuse, leathery; stipules leathery, cuspidate, deciduous; inflorescence a many-flowered terminal head; flowers red.

Endemic; species 1, extending from the northern Transvaal, Swaziland, Zululand, Natal, through the coastal area to the Swellendam district; also recorded from the Albany district. (Type: *B. bubalina* (Linn. f.) Sims)

8283 **11. RANDIA** Linn., Sp. Pl., ed. 1, p. 1192 (1753)

(*Stylocoryna* Cav.)

Calyx shorter than the corolla-tube, 5-lobed, glabrous or hairy; tube campanulate or shallowly saucer-shaped; lobes ovate or spatulate, rarely spathaceous or foliaceous. *Corolla* 5-lobed, occasionally 4-lobed, very rarely 8—7-lobed, glabrous or hairy; tube campanulate above and tubular below, or tubular, sometimes with a ring of hairs within; lobes more or less obovate or ovate, as long as or shorter than the tube. *Stamens* 5, affixed deep in the corolla-throat or in the mouth of the corolla, exserted or included; filaments linear, much shorter than the anthers; anthers oblong or linear, sometimes with an apical appendage, sometimes sessile. *Disc* annular or cushion-like. *Ovary* 2-chambered, very rarely 7—8-lobed, with numerous ovules in each chamber; style terete, sometimes gradually thickening upwards, exserted;

stigma club-shaped or clapper-shaped, entire, bidentate or bilobed, sulcate. *Fruit* a 2-locular berry, usually many-seeded. *Seeds* subglobose or kidney-shaped, papillose or striate; embryo straight; cotyledons ovate, thin; radicle stout, terete, longer than the cotyledons; endosperm fleshy or horny.

Erect or scandent spinous or unarmed trees or shrubs; leaves opposite or verticillate; stipules rather short, solitary, entire; inflorescence corymbose or flowers solitary or few together.

Described species between 200 and 300, found in almost all tropical countries, especially Asia and Africa; 9 species in South Africa, extending from the Transvaal and Natal, through the coastal belt to the Swellendam district. (Type: *R. mitis* Linn.)

8285 12. GARDENIA Ellis, Phil. Trans., vol. 51, p. 935, t. 23 (1761)

(*Warneria* Linn.)

Calyx much shorter than the corolla-tube, 5—8-lobed, fleshy, glabrous or hairy; tube campanulate, subcampanulate, or tubular, often villous at the base, sometimes papillose within, sometimes the tube split completely down one side or partly split with one lip with 3 and the other lip with 4 linear appendages from the back of the apex. *Corolla* 5—7-lobed, glabrous or hairy; tube deeply campanulate, tubular, or cylindric, sometimes campanulate above and shortly tubular below, hairy within; lobes broadly ovate, or obovate, or elliptic. *Stamens* 5—8, usually affixed in the throat of the corolla-tube, more rarely at the middle of the corolla-tube, included or subexserted; anthers sessile, long-linear, usually with an apical appendage, rarely hairy on the back. *Disc* tumid, sometimes annular, sometimes crenate. *Ovary* normally 2-chambered, with many ovules, or 1-chambered below and 6-chambered above the middle; style terete or linear, included or subexserted; stigma linear-lanceolate or clavate, sometimes with tumid ridges bent into a hairpin shape, sometimes 2-lobed. *Fruit* globose or large and ovoid. *Seed* compressed, variously shaped, smooth or almost smooth; embryo small in relation to the size of the seed, straight; cotyledons ovate, elliptic, or orbicular, sometimes emarginate at the apex; radicle terete, as long as or longer than the cotyledons; endosperm usually horny, rarely subfleshy.

Shrubs or trees, with opposite rarely verticillate and 3—4-nate branches; leaves opposite, rarely verticillate; stipules connate; flowers usually solitary, subsessile or pedicelled, rarely in a corymbose inflorescence.

Described species between 270 and 280, natives of Africa, Madagascar, the Malay Peninsula, India, China, the Philippine Islands, Australia, South America, and the tropical and subtropical parts of the Old World generally; 11 species recorded from South Africa, ranging from Ngamiland, Bechuanaland, the Transvaal, Swaziland, Zululand, Natal, through the coastal area to the Alexandria district. (Type: *G. jasminoides* Ellis)

8285a 13. ROTHMANNIA Thunb., in Vet. Acad. Handl. Stockh., p. 63 (1776)

Calyx shorter than the corolla-tube, 5-lobed, fleshy; tube somewhat compressed, "fur"-lined within; lobes linear, longer or shorter than the tube. *Corolla* 5-lobed, glabrous; tube campanulate above, cylindric below, hairy within on the lower portion; lobes obovate-oblong. *Stamens* 5, affixed high up in corolla-throat, subexserted; anthers sessile, long-linear. *Disc* tumid. *Ovary* 2-chambered, with many ovules in each chamber; style linear, exserted; stigma linear-lanceolate, 2-lobed. *Fruit* globose. *Seed* compressed, smooth; embryo straight; cotyledons ovate, somewhat cordate at the base, deeply cleft; radicle stout, terete, about as long as the cotyledons.

Slender trees up to 15 to 40 ft. high; leaves opposite, elliptic, subacuminate, narrowing into a petiole; stipules ovate, hairy within; flowers solitary, sessile.

An African genus of 2(?) species, both of which occur in South Africa and extend from the northern Transvaal, through Zululand and Natal and the coastal belt to the Swellendam district; also recorded from the Albany district. (Type: *R. capensis* Thunb.)

NOTE.—Mr. A. A. Bullock of Kew recognizes the genus *Rothmannia* Thunb. and has transferred *Randia fischeri* K. Schum. and *Gardenia annae* Wright var. *moramballae* Hiern to *Rothmannia fischeri* (K. Schum.) A. A. Bullock. See *Ann. Trans. Mus.*, vol. 17, p. 224 (1937).—E. P. P.

8293 14. OXYANTHUS DC., in Ann. Mus. Paris, vol. 9, p. 218 (1807)

Calyx much shorter than the corolla-tube, 5-lobed, glabrous; tube campanulate or turbinate-oblong, sometimes truncate; lobes subulate, linear, or ovate, about as long as the tube. *Corolla* 5-lobed, glabrous; tube long-cylindric, sometimes almost filiform, hairy within; lobes narrowly elliptic or lanceolate, acuminate. *Stamens* 5, affixed in the corolla-mouth, exserted; anthers linear, sessile, with a curved or straight apiculus, sometimes bluntly sagittate at the base. *Disc* cushion-like, annular. *Ovary* 1—2-chambered, with many ovules; style filiform, exserted; stigma usually fusiform or clavate, or elliptic, usually bifid at the apex. *Fruit* baccate, ellipsoid or ovoid, many-seeded, very rarely with a single seed in each loculus. *Seeds* somewhat compressed, often transversely oblong in outline, striate; embryo straight; cotyledons ovate; radicle terete, as long as or longer than the cotyledons; endosperm fleshy or cartilaginous.

Shrubs or trees; leaves opposite, often very large, shortly petioled, entire; stipules ovate, deciduous; inflorescence an axillary raceme or panicle.

An African genus of 53 described species; 3 species in South Africa, found in the Transvaal, Swaziland, Zululand, Natal, and the coastal area to the Kentani district. (Type: *O. speciosus* DC.)

8308 15. TRICALYSIA A. Rich. ex DC. Prodr., vol. 4, p. 445 (1830)

Calyx shorter than the corolla-tube, 4—6-toothed, sometimes 2-lipped, glabrous or hairy; tube campanulate or shallowly saucer-shaped; lobes linear or ovate, shorter than or about as long as the tube. *Corolla* 4—7-lobed, glabrous or hairy; tube cylindric, funnel-shaped, or deeply campanulate, sometimes densely villous in the mouth and throat, sometimes hairy lower down within; lobes ovate-elliptic, oblong-elliptic, or elliptic, shorter than or about as long as the tube, sometimes apiculate. *Stamens* 4—8, affixed in the mouth of the corolla-tube, exserted; filaments very short or as long as or longer than the anthers; anthers linear, sometimes with a long-linear apical appendage. *Disc* tumid, truncate, annular. *Ovary* 1—2-chambered, with 2 ovules in each chamber or 2 ovules when ovary is 1-chambered; style terete, exserted; stigma 2-lobed. *Fruit* globose, about the size of a pea. *Seed* semi-orbicular in outline or half-moon-shaped, convex on one face, deeply convex or flat on the other face, reticulated, sometimes pustulate; embryo straight; cotyledons elliptic; radicle stout, terete, longer than the cotyledons; endosperm horny.

Small shrubs or trees up to 15 ft. high; leaves opposite, elliptic or lanceolate, sometimes acuminate, glabrous or hairy; stipules subulate; inflorescence an axillary cyme of several flowers; bracts present, rarely connate and enveloping the calyx.

Described species 123, mostly African; a few recorded from Madagascar, India, Malaya, and the Philippine Islands; probably not all the species described belong to the genus; 5 or 6 species in South Africa, found in the northern Transvaal, Swaziland, Zululand, Natal, and through the coastal area to the Kentani district. (Type: *T. angolensis* A. Rich.)

8308a **16. KRAUSSIA** Harv., in Hook. Lond. Journ. Bot., vol. 1, p. 21 (1842)

Calyx shorter than the corolla-tube, 4—6-lobed; tube shallowly campanulate; lobes elliptic, obtuse or acute, about as long as the tube. *Corolla* 5-lobed, glabrous; tube campanulate, villous within; lobes oblong-elliptic, longer than the tube. *Stamens* 5, affixed in the mouth of the corolla, exserted; anthers subsessile, linear, sometimes minutely apiculate. *Disc* annular. *Ovary* 2-chambered, with 1—2 ovules in each chamber; style thick, cylindric, ellipsoid or somewhat globose; stigma 2-lobed, with the lobes held together by interlocking hairs and with longitudinal short wavy membranous wings. *Fruit* globose, about the size of a pea. *Seed* subglobose, pustulate; embryo straight; cotyledons small in relation to size of the seed; radicle stout, terete, longer than the cotyledons; endosperm horny.

Shrubs or small trees; leaves opposite, oblong, lanceolate, or narrowly ovate-lanceolate, subsessile or distinctly petioled; stipules triangular, acuminate, villous within; inflorescence a simple lax bracteolate cyme.

An African genus of 3 species; 2 species found in South Africa and recorded from the northern Transvaal, Swaziland, Zululand, and Natal. (Type: *K. floribunda* Harv.)

NOTE.—Mr. A. A. Bullock, *Kew Bulletin*, p. 254 (1931), describes the ovary chamber in 2 species as each having 2 ovules. In all the specimens I dissected I found the ovules to be solitary. The specimens he quotes under *K. incerta* and *K. speciosa* I have not seen.—E. P. P.

8326 **17. HEINSIA** DC., Prodr., vol. 4, p. 390 (1830)

Calyx much shorter than the corolla-tube, 5-lobed, glabrous; tube campanulate or cup-shaped, with a row of small erect glands(?) on the rim; lobes spatulate or more or less oval or oblong, longer than the tube, subfoliaceous. *Corolla* 5—6-lobed, silky; tube cylindric, villous in the throat and within; lobes shorter than the tube, ovate, often shortly apiculate. *Stamens* 5—6, affixed deep in the corolla-throat, included; filaments linear, usually shorter than the anthers; anthers linear, sometimes with a minute projection at the base. *Disc* small, tumid. *Ovary* 2-chambered, with many ovules in each chamber; style filiform, included; stigma of 2 linear-oblong arms each on a short stalk. *Fruit* dry, indehiscent, many-seeded. *Seeds* small, roundly angular; testa pale, crustaceous, foveolate; embryo clavate; endosperm fleshy.

Upright or decumbent shrubs or small trees; leaves opposite, shortly petioled, entire; stipules small, subulate and 2 together or large, ovate, or lanceolate and solitary; inflorescence a terminal or lateral cyme of few to many flowers or flowers solitary.

An African genus of 10 species, one of which extends into the northern Transvaal. (Type: *H. jasmiflora* DC.=*H. pulchella* (G. Don) K. Schum.)

8343 **18. ALBERTA** E. Mey., in Linnaea, vol. 12, p. 258 (1838)

Calyx much shorter than the corolla-tube, unequally 5-lobed, hairy without and within; tube very shallow; lobes longer than the tube, with 3 lobes ovate and acute and 2 lobes oblong and obtuse. *Corolla* 5-lobed, pubescent; tube long funnel-shaped, somewhat curved; lobes ovate, subacute. *Stamens* 5, affixed in the uppermost part of the corolla-tube, included; anthers sessile, linear, with an apical tail and bluntly sagittate at the base, hairy on the back. *Disc* annular. *Ovary* 2-chambered, with a solitary ovule in each chamber; style filiform, exserted; stigma of 2 linear lobes. *Fruit* dry, ellipsoid, 2-locular, 10-ribbed, crowned with the 2—4 spatulate veiny large coloured calyx-lobes. *Seed* cylindric; embryo terete; endosperm fleshy.

A large shrub or tree up to 30 ft. high; leaves opposite, subsessile or petioled, oblong-obtuse; stipules aristate, cup-like, broad, deciduous; inflorescence a terminal panicle.

Species 5, 4 of which occur in Madagascar and 1 in South Africa and recorded from Zululand, Natal, and Pondoland. (Type: *A. magna* E. Mey.)

8348 **19. PENTANISIA** Harv., in Hook. Lond. Journ. Bot., vol. 1, p. 21 (1842)

Calyx shorter than the corolla-tube, 3—5-lobed, hairy; tube very shallow; lobes 1—3, elongated and foliaceous and with the others small, subulate, or 0, persistent. *Corolla* 5-lobed, hairy; tube cylindric, campanulate in the uppermost part, villous in the throat; lobes oblong, apiculate, shorter than the tube. *Stamens* 4—5, affixed deep in the corolla-throat, included; filaments filamentous, about as long as the anthers; anthers linear. *Disc* annular. *Ovary* 2-chambered, with a solitary ovule in each chamber; style filiform, exserted; stigma of 2 filiform arms. *Fruit* obovoid, of 2-plano-convex cocci; pericarp papillose, horny, striate within. *Seed* suborbicular or sub-3-angled, or elliptic in outline; testa membranous; embryo straight; cotyledons fleshy; radicle stout, conical; endosperm fleshy.

Perennial herbs with stems from a large stout woody rootstock, glabrous or hairy; leaves opposite, sessile or shortly petioled, ovate or linear; stipules 3—5-fid or setose, adnate to the petiole, persistent; inflorescence a terminal head-like cyme, afterwards in an elongated spike.

An African genus of 16 described species; 3 species recorded from South Africa and found in the Transvaal, Swaziland, Zululand, Natal, Basutoland, the Orange Free State, East Griqualand, Pondoland, to the Komgha district; also recorded from the Queenstown district. (Type: *P. variabilis* (E. Mey.) Harv.)

8351 **20. VANGUERIA** Juss., Gen., p. 206 (1789)

Calyx shorter than the corolla-tube, 5-lobed, glabrous or hairy, often persistent; tube saucer-shaped; lobes ovate, longer than the tube, erect or spreading. *Corolla* 5-lobed, glabrous or hairy; tube campanulate or cylindric, villous in the throat; lobes ovate, acute, as long as the tube. *Stamens* 5, affixed in the mouth of the corolla, shortly exserted; filaments linear, shorter than the anthers; anthers oblong or more or less ovate, often apiculate at the apex. *Disc* annular or saucer-shaped. *Ovary* more or less globose, 5-chambered, with a single ovule in each chamber; style terete, sometimes swollen at the base, shortly exserted; stigma much thickened, cylindric, furrowed, minutely or distinctly 5-lobed at the apex. *Fruit* drupaceous, usually crowned with the persistent calyx, mostly with 5 seeds, rarely with some seeds abortive. *Seed* subglobose; testa bony; embryo straight; cotyledons oblong, thick, fleshy; radicle thick, subglobose or oblong in outline and truncate; endosperm fleshy.

Shrubs or small trees, often unarmed, glabrous or hairy; leaves opposite, shortly petioled, elliptic, oblong or somewhat orbicular, glabrous or hairy; stipules often broad, connate at the base, villous within; inflorescence arising from the nodes of the branches, a raceme of cymes, many-flowered; bracts present.

Species 27, mostly African, some found in Madagascar; 5 species in South Africa, recorded from the Transvaal, Swaziland, Zululand, Natal, the Orange Free State, and Pondoland; also recorded from South West Africa, Bechuanaland, Griqualand West, and the Kuruman district.

8351a **21. ERIOSEMOPSIS** Robyns in Bull. Jard. Bot. de l'État Bruxelles, p. 38 (1928)

Calyx about as long as the corolla-tube, 5- (rarely 6-) partite almost to the base, villous; segments erect, somewhat unequal, linear. *Corolla* 5- (rarely

6-) lobed, villous; tube campanulate, villous in the throat; lobes reflexed, ovate, acuminate, longer than the tube. *Stamens* 5, rarely 6, affixed in the mouth of the corolla, exserted; filaments linear, about as long as the anthers; anthers oblong. *Disc* tumid. *Ovary* 2-chambered, with a single ovule in each chamber; style terete, subexserted; stigma globose, 2-lobed. *Fruit* and *seed* not seen.

Subherbaceous, erect, with the upright stems from a woody rootstock, villous-tomentose; leaves opposite, sessile or subsessile, elliptic; stipules small, subulate, connate at the apex; inflorescence a few-flowered peduncled axillary cyme.

Endemic; species 1, recorded from Natal and Pondoland. (Type: *E. subanisophylla* Robyns)

8351b **22. PYGMAEOTHAMNUS** Robyns, Bull. du Jard. Bot. de l'État Bruxelles, vol. 11, p. 29 (1928)

Calyx as long as or shorter than the corolla-tube, 5-lobed, glabrous; tube almost obsolete, sometimes saucer-shaped, sometimes truncate; lobes unequal, oblong, sometimes reduced to teeth. *Corolla* 4—5-lobed, glabrous; tube broadly tubular, sometimes very short, with a ring of long reflexed hairs within; lobes ovate, oblong-lanceolate, sometimes with an apical apiculus, as long as or longer than the tube. *Stamens* 4—5, affixed in the mouth of the corolla, exserted; filaments linear, much shorter than the anthers; anthers oblong, shortly mucronate. *Disc* usually annular. *Ovary* 2-chambered, with a single ovule in each chamber; style terete or linear, slightly exserted; stigma stout, shortly cylindric, 2-lobed. *Fruit* a drupe, with 2 seeds or, by abortion, 1 seed. *Seed* ellipsoid; embryo straight; cotyledons oblong, fleshy; radicle stout, cylindric, truncate at the base, slightly longer than the cotyledons.

Usually dwarf herbs from a stout underground rootstock; leaves mostly opposite, rarely 3-nate, shortly petioled, often oblanceolate or oblong; stipules scarious, connate at base, shortly subulate; inflorescence an axillary cyme, shortly racemose or simple.

An African genus of 4 species, all of which occur in South Africa and are found in the Transvaal, the Orange Free State, Natal, and Bechuanaland. (Type: *P. zeyheri* (Sond.) Robyns)

8351c **23. TAPIPHYLLUM** Robyns, Bull. Jard. Bot. de l'État Bruxelles, vol. 11, p. 101 (1928)

Calyx shorter than the corolla-tube, very rarely equalling it, 5-lobed, hairy; tube obsolete; lobes unequal, linear, flat or concave. *Corolla* 5-lobed, hairy; tube shortly and broadly tubular or cylindric, glabrous or villous in the throat, with a ring of long reflexed hairs within; lobes elliptic-oblong, often with an apiculus from the back of the apex. *Stamens* 5, affixed in the corolla-mouth, exserted; filaments short, linear, shorter than the anthers; anthers ovate-oblong or elliptic, often shortly apiculate. *Disc* depressed or tumid. *Ovary* 4—5-, rarely 6-chambered, with a single ovule in each chamber; style terete, exserted; stigma coroniform or shortly and thickly cylindric, 4—5- (rarely 6-) lobed. *Fruit* a drupe, globose, with 4—5 pyrenes. *Seed* ellipsoid; embryo straight; cotyledons ovate or elliptic; radicle as long as or longer than the cotyledons.

Shrubs or small trees or herbaceous from a woody rootstock; leaves opposite or very rarely 3-nate, tomentose; stipules connate at the base, often villous within; inflorescence an axillary pedunculate cyme or flowers massed in dense fascicles.

An African genus of 12 species; 1 species occurs in South Africa, recorded from Bechuanaland, the Transvaal, Natal, and also recorded from the Victoria East district. (Type: *T. parvifolium* (Sond.) Robyns)

8351d 24. RYTIGYNIA Blume, Mus. Bot. Lugd. Bot., vol. 1, p. 178 (1850)

Calyx shorter than the corolla-tube, very often truncate or toothed, very rarely lobed; tube almost obsolete. *Corolla* 5-lobed, glabrous; tube campanulate, obconic, urceolate, very rarely cylindric, pilose in the throat with reflexed hairs which are often annular; lobes ovate, reflexed, usually longer than the tube, sometimes acute or with a small apical appendage, often papillate. *Stamens* 5, affixed in the mouth of the corolla, exserted or sub-exserted; filaments very short; anthers ovate, glabrous or slightly setulose-papillose. *Disc* annular, often depressed. *Ovary* 3—5-chambered, very rarely 2- or 6-chambered, with a single ovule in each chamber; style terete, slightly exserted; stigma coroniform, rarely cylindric, lobed at the apex, very rarely truncate. *Fruit* a globose drupe, often crowned with the persistent calyx.

Shrubs, very rarely small trees, very rarely with a few spines; leaves opposite, often lanceolate or elliptic; stipules often connate at the base, often villous within; inflorescence a few-flowered cyme or umbel, sometimes flowers solitary and axillary.

An African genus of 68 species; 1 species recorded from the northern Transvaal. (Type: *R. senegalensis* Blume)

8351e 25. VANGUERIOPSIS Robyns in Bull. Jard. Bot. de l'État Bruxelles, vol. 11, p. 248 (1928)

Calyx shorter than the corolla-tube, 5-lobed, sometimes densely villous; tube almost obsolete; lobes ovate or lanceolate, or linear. *Corolla* 5-lobed, densely villous; tube broadly tubular or subcylindric or subcampanulate, with a ring of reflexed hairs within, rarely glabrous; lobes reflexed, long-linear, sometimes about 3 times as long as the tube. *Stamens* 5, affixed in the mouth of the corolla, exserted; filaments linear, sometimes longer than the anthers; anthers lanceolate, linear, or ovate-lanceolate, sometimes pilose on the inner face. *Disc* annular, tumid. *Ovary* 2-chambered, with a single ovule in each chamber; style terete, much exserted; stigma shortly and broadly cylindric, 2-lobed. *Fruit* a drupe, subglobose.

Scandent shrubs or small trees, armed and unarmed; leaves opposite, petioled, oblong, elliptic, or ovate, glabrous or hairy; stipules connate at the base, more or less persistent; inflorescence an axillary cyme.

An African genus of 18 species; 1 species recorded from South West Africa. (Type: *V. discolor* (Benth.) Robyns)

8351f 26. LAGYNIAS E. Mey., in Drège Zwei Pfl. Docum., p. 159 (1843)

Calyx about as long as or longer than the corolla-tube, 5-lobed, glabrous or hairy; tube obsolete; lobes foliaceous, long-linear or linear-spathulate. *Corolla* 5-lobed, glabrous or hairy; tube tubular and longer than broad or tubular and about as long as broad, or campanulate, sparsely villous or glabrescent in the throat, with a ring of reflexed hairs near the base; lobes lanceolate and long-acuminate or linear and acute, reflexed, longer than the tube. *Stamens* 5, affixed in the mouth of the corolla-tube, exserted; filaments very short, shorter than the anthers; anthers ovate, oblong or lanceolate, apiculate. *Disc* annular, tumid. *Ovary* 5-chambered, with a single ovule in each chamber; style terete, exserted; stigma shortly and broadly cylindric, sulcate, shortly 5-lobed. *Fruit* a drupe, globose. *Seed* ellipsoid; embryo straight, fleshy; cotyledons oblong; radicle broadly linear, longer than the cotyledons; endosperm fleshy.

Shrubs or small trees; leaves opposite, petioled, oblong, elliptic or lanceolate-elliptic, usually paler on the under surface, glabrous or hairy; stipules shortly

connate at the base, shortly subulate, villous within; inflorescence an axillary cyme, dichotomously branched.

An African genus of 5 species; 2 species in South Africa, recorded from the northern Transvaal, Zululand, and Natal. (Type: *L. discolor* E. Mey.)

NOTE.—In the *Flora of Tropical Africa*, vol. 3, p. 156 (1877), Hiern sinks *Lagynias* E. Mey. under *Cuviera* DC., but Robyns (*Bull. du Jard. Bot. de l'Etat Bruxelles*, vol. 11, p. 312 (1928)) makes no mention of *Cuviera* DC. being synonymous with *Lagynias* E. Mey. Specimens from South Africa, named at Kew, are placed in the latter genus, and I have had to accept that view also, so far as the South African plants are concerned, as I have no means of determining whether *Cuviera* and *Lagynias* are two distinct genera or whether one is a synonym of the other.—E. P. P.

8352 27. CANTHIUM Lam., Encycl., vol. 1, p. 602 (1785)

(*Plectronia* DC., *Keetia* Phill., *Mitrastigma* Harv.)

Calyx much shorter than the corolla-tube, saucer- or basin-shaped, with 4—5 small teeth, very rarely of evident ovate lobes, usually glabrous, sometimes ciliate. *Corolla* 4—5-lobed, glabrous; tube shortly and broadly tubular or more or less urceolate, sometimes villous in the throat, usually villous within and sometimes with a ring of reflexed hairs, rarely papillate within; lobes ovate, elliptic, lanceolate, oblong, or oblong-elliptic, strongly reflexed or erect or spreading, shorter than, as long as, or longer than the tube. *Stamens* 4—5, affixed in the mouth of the corolla, exerted or subexserted; filaments usually shorter than the anthers; anthers lanceolate or elliptic, sometimes mucronate, sometimes sagittate at the base, sometimes subsessile. *Disc* annular, more rarely conical, often tumid. *Ovary* normally 2-chambered, rarely 3—4-chambered, with a single ovule in each chamber; style terete, included or exerted; stigma shortly and broadly cylindric and 2—3-lobed, or fleshy and subcapitate and 2-lobed, or subglobose and deeply sulcate, or ellipsoid, and globose and 4-lobed, or of 2 fleshy ovate lobes. *Fruit* a drupe, didymous or by abortion 1-locular. *Seeds* usually ellipsoid; embryo straight, terete; cotyledons ovate or elliptic; radicle thick, cylindric, longer than the cotyledons; endosperm fleshy.

Armed or unarmed shrubs or trees, often scandent; leaves opposite, petioled; stipules acuminate or long-cuspidate or ovate-lanceolate and acute, persistent or often early deciduous; inflorescence an axillary corymbose cyme, more rarely flowers solitary or in sessile fascicles.

Described species over 50, natives of Africa, the Mascarene Islands, and India; 13 species found in South Africa, recorded from South West Africa, Bechuanaland, the Transvaal, Swaziland, Zululand, Natal, the Orange Free State, and in the coastal areas as far as the Cape; also recorded inland from the Albany and Queens-town districts. (Type: *C. parviflorum* Lam.)

8352a 28. PLECTRONIELLA Robyns, Bull. Jard. Bot. de l'État Bruxelles, p. 243 (1928)

Calyx much shorter than the corolla-tube, glabrous; tube saucer-shaped, almost truncate, with 4 very small teeth. *Corolla* 4-lobed, glabrous; tube campanulate, densely villous in the throat and with a row of reflexed hairs in the throat; lobes oblong, strongly reflexed, slightly longer than the tube. *Stamens* 4, affixed in the mouth of the corolla, exerted; filaments linear, shorter than the anthers; anthers lanceolate. *Disc* annular, tumid. *Ovary* 3-chambered, with a single ovule in each chamber; style terete, exerted; stigma subglobose, 3-lobed. *Fruit* a drupe, subglobose, sometimes with 3 loculi but mostly with 2, or 1 loculus abortive. *Seed* more or less ellipsoid; embryo straight; terete; cotyledons small, ovate-oblong; radicle much longer than the cotyledons; endosperm fleshy.

An armed shrub 10 ft. high or a small tree 15—18 ft. high; leaves opposite, shortly petioled, elliptic or lanceolate, glabrous or hairy; stipules small, subulate; inflorescence an axillary many-flowered corymbose cyme.

An African genus of 2 species, both in South Africa; recorded from the northern Transvaal, Swaziland, Zululand, and Natal. (Type: *P. armata* (K. Schum.) Robyns)

8352b 29. DINOCANTHIUM Bremek., in Ann. Tvl. Mus., vol. 15, p. 259 (1933)

Calyx as long as or shorter than the corolla, 4-lobed, glabrous; lobes triangular. *Corolla* 4-lobed, glabrous; somewhat globose, densely bearded in the throat; lobes oblong-elliptic, valvate, apiculate. *Stamens* 4, affixed in the corolla-throat; anthers subsessile, ovate. *Disc* semiglobose, glabrous. *Ovary* 2-chambered, with a single ovule in each chamber; style glabrous; stigma capitate, obscurely 2-lobed. *Fruit* globose. *Seed* ellipsoid; embryo curved; cotyledons elliptic; radicle curved and lying on the edge of the cotyledons.

An armed shrub or small tree with the branchlets standing at right angles to the branches; leaves opposite, shortly petioled, elliptic; stipules aristate, deciduous; flowers solitary or fascicled.

Endemic, species 1, found in the Northern Transvaal and Zululand. (Type: *D. hystrix* Bremek.)

8359 30. PACHYSTIGMA Hochst., in Flora, vol. 25, p. 234 (1842)

Calyx usually as long as or longer than the corolla-tube, 5-lobed, glabrous or hairy; tube almost obsolete; lobes lanceolate, lanceolate-linear, linear-oblong, usually foliaceous. *Corolla* 5-lobed, glabrous or hairy; tube shortly and broadly tubular, with a ring of reflexed hairs within, sometimes villous in the throat; lobes linear-lanceolate, lanceolate or obovate-oblong, often acuminate, reflexed, as long as or longer than the corolla-tube. *Stamens* 5, affixed in the mouth of the corolla, exserted, usually much shorter than the anthers, more rarely as long; anthers lanceolate, sometimes apiculate. *Disc* annular, tumid. *Ovary* 5-(very rarely 4-) chambered, with a single ovule in each chamber; style terete, exserted; stigma shortly and broadly cylindric, often sulcate, 5-lobed, very rarely 4-lobed. *Fruit* a drupe, often globose, crowned with the persistent calyx, 5-seeded or by abortion 2—3-seeded. *Seed* ellipsoid; embryo straight; cotyledons oblong or elliptic; radicle usually stout and longer than the cotyledons; endosperm fleshy.

Dwarf plants arising from a woody rootstock or erect shrubs; leaves often opposite, shortly petioled; stipules connate at the base and often villous within; inflorescence a simple axillary cyme, rarely the flowers fascicled.

An African genus of 10 species, 9 of which occur in South Africa, found in Bechuanaland, the Transvaal, Swaziland, Zululand, Natal, the Orange Free State, Griqualand East, Pondoland to the Komgha and Queenstown districts. (Type: *P. venosum* (Sond.) Hochst.)

8359a 31. FADOGIA Schweinf., Reliq. Kotsch., p. 47, t. 32 (1868)

Calyx shorter than the corolla-tube, 5—9-lobed, glabrous; tube shallowly cup-shaped; lobes unequal, ovate, acuminate. *Corolla* 5- (rarely 6-) lobed, glabrous; tube cylindric or campanulate, densely villous within; lobes ovate, usually long-acuminate, as long as or longer than the tube, often with a projection at the back of the apex. *Stamens* 5, rarely 6, affixed in the mouth of the corolla, shortly exserted; filaments linear, shorter than the anthers; anthers oblong, sometimes subsessile, sometimes with a fleshy apiculus, sometimes sagittate at the base. *Disc* annular or discoid. *Ovary* usually 3-chambered, rarely 4- or 5-chambered, with a solitary ovule in each chamber; style terete, shortly exserted; stigma subglobose or shortly cylindric, often

truncate at the base, shallowly 3—5-lobed, furrowed, sometimes prominently ribbed. *Fruit* drupaceous, often globose, sometimes oblique, usually crowned with the calyx teeth. *Seed* more or less ellipsoid; embryo straight; endosperm fleshy.

Erect herbs, very rarely dwarf or large shrubs or small trees, usually with the erect stems arising from a large woody rootstock; leaves 3—5-nate, rarely opposite, subsessile or shortly petioled, sometimes pale on the under surface; stipules small, connate at the base, often villous within, persistent, 3—5-tailed; inflorescence a peduncled, rarely subsessile, few-flowered axillary cyme, rarely the flowers solitary.

An African genus of 45 species; 5 species recorded from South Africa and found in the Transvaal and Swaziland. (Type: *F. cienkowskii* Schweinf.)

8360 32. *ANCYLANTHUS* Desf. in *Mém. Mus. Paris*, vol. 4, p. 5, t. 2 (1818)

Calyx shorter than the corolla-tube, 5-lobed, hairy; tube shallowly saucer-shaped; lobes oblong-lanceolate, ovate-lanceolate, or subulate, persistent. *Corolla* 5-lobed, hairy; tube slightly curved, tubular, with a ring of reflexed hairs near the base; lobes ovate or ovate-lanceolate, shorter than the tube, with an apiculus at the back of the apex. *Stamens* 5, affixed in the corollathroat, subincluded; filaments broadly linear, much shorter than the anthers; anthers lanceolate-linear. *Disc* annular. *Ovary* 5-chambered, with a single ovule in each chamber; style terete, shortly exserted; stigma more or less obconic, sulcate, shortly 5-lobed. *Fruit* fleshy, globose, reddish, pyrenes 5 or fewer. *Seed* pendulous; testa thin; embryo nearly the length of the seed; endosperm fleshy.

Erect or decumbent rigid tomentose shrubs; leaves opposite, lanceolate or elliptic, subsessile, not veined, coriaceous, somewhat paler on the under surface; stipules ovate or subulate; flowers in fascicles.

An African genus of 7 species; 1 species recorded from Ngamiland and South West Africa. (Type: *A. rubiginosus* Desf.)

8383 33. *PAVETTA* Linn., *Sp. Pl.*, ed. 1, p. 110 (1753)

Calyx much shorter than the corolla-tube, 4-toothed or -lobed, occasionally 5-toothed or -lobed, sometimes almost truncate, sometimes persistent and rarely accrescent, glabrous or hairy; tube usually saucer-shaped; lobes when present, linear-lanceolate, linear, or ovate. *Corolla* 4-lobed, very rarely occasionally 5-lobed, glabrous; tube sometimes villous in throat, usually hairy within; lobes elliptic, lanceolate-oblong, lanceolate-ovate, obovate-oblong, elliptic-lanceolate, or lanceolate, shorter than the tube. *Stamens* 4, very occasionally 5, affixed in the mouth of the corolla, exserted; filaments linear, shorter than the anthers; anthers linear, sometimes acuminate or apiculate, usually sagittate at the base, usually twisted after dehiscence. *Disc* annular, tumid. *Ovary* 2-chambered, with a solitary ovule in each chamber, very rarely with 2 ovules in each chamber; style linear, exserted, often twice the length of the corolla, usually hairy above; stigma sometimes thickened and linear-lanceolate in outline or subclavate, thickened and terete, or simple and 2-lobed. *Fruit* drupaceous, 1- or 2-seeded. *Seeds* semiglobose; embryo straight; cotyledons foliaceous, obliquely oblong, or ovate or cordate at the base; radicle minute or thick and terete and about as long as the cotyledons.

Shrubs, rarely trees; leaves opposite, very rarely ternate, petioled or sessile, entire, with bacterial nodules; stipules cuspidate or awned; inflorescence corymbose, subumbellate or subcapitate, occasionally a panicle, terminal and sessile or shortly peduncled, rarely axillary and long-peduncled, very rarely flowers solitary.

Described species between 340 and 350, natives of Africa, Arabia, India, Indo-China, South China and Formosa, the Malay Archipelago, tropical Australia, and Melanesia; 41 species described from South Africa and recorded from South West Africa, Bechuanaland, the Transvaal, Swaziland, Zululand, Natal, Basutoland, the Orange Free State, through the coastal area to the Port Elizabeth district. (Type: *P. indica* Linn.)

NOTE.—There appears little doubt that Professor C. E. B. Bremekamp has described too many species from South Africa. The description of the embryo given above may not apply to all the species as the fruits are invariably infertile.—E. P. P.

8402 34. GRUMILEA Gaertn., Fruct., vol. 1, p. 138, t. 38, f. 2 (1788)

Calyx much shorter than the corolla-tube, glabrous; tube saucer- or cup-shaped, almost truncate, with a few very small teeth. *Corolla* 5-lobed, glabrous; tube campanulate or shortly tubular, pilose in the throat; lobes ovate, elliptic, or elliptic-oblong, somewhat shorter than the tube, reflexed. *Stamens* 5, affixed in the middle of the corolla-tube, slightly exserted; filaments linear, shorter or about as long as the anthers; anthers linear or oblong, glabrous or pilose. *Disc* hemispherical. *Ovary* 2-chambered, with a single ovule in each chamber; style linear, exserted; stigma somewhat club-shaped, bifid at apex. *Fruit* a berry, crowned with the persistent calyx, subglobose; pyrenes 2; pericarp coriaceous. *Seed* flat on one face, convex on the other; embryo small in relation to the size of the seed, straight or somewhat curved; cotyledons ovate; radicle terete, conical, about as long as the cotyledons; endosperm bony, ruminated.

Shrubs or small trees; leaves opposite, petioled, elliptic, elliptic-lanceolate, or obovate; stipules lanceolate or ovate, caducous; inflorescence a panicle of terminal cymes.

Described species 168, though several transferred to other genera, fairly widely distributed in the Old World; 1 species recorded from the Transvaal, Swaziland, Natal, and the Port Elizabeth and Albany districts. (Type: *G. nigra* Gaertn.)

8435 35. GALOPINA Thunb., Nov. Gen. Pl., vol. 1, p. 3 (1781)

Flowers bisexual or unisexual and bisexual. *Calyx* not developed above the ovary. *Corolla* 4-lobed, rarely 5-lobed, glabrous, sometimes papillose; tube campanulate, lobes oblong-linear, reflexed, longer than the tube. *Stamens* 4, rarely 3 or 5, exserted; filaments filamentous; anthers linear. *Disc* 0. *Ovary* didymous, 2-chambered, with a single ovule in each chamber, warted; styles 2, exserted or included. *Fruit* bilobed, consisting of 2 mericarps; mericarps at length separating, indehiscent, warted on the back, 1-seeded. *Seed* conforming to the shape of the mericarp; embryo straight; cotyledons elliptic; radicle flat or terete, longer than or as long as the cotyledons; endosperm fleshy.

Perennial herbs; leaves opposite, lanceolate, ovate, or linear-lanceolate, entire, often acuminate, petioled or subsessile, glabrous or hairy; stipules 3—6-parted; inflorescence a lax panicle.

An African genus of 3 species, one of which occurs in tropical Africa; all occur in South Africa and are recorded from the Transvaal, Natal, Griqualand East, and through the coastal area to the Swellendam district. (Type: *G. circaeoides* Thunb.)

8438 36. ANTHOSPERMUM Linn., Sp. Pl., ed. 1, p. 1058 (1753)

Flowers bisexual and unisexual or both. *Calyx* often not produced above the ovary, sometimes 4-toothed or the lobes ovate, rarely in the female flower 2-lobed. *Corolla* 4-lobed, occasionally 5-lobed in the male flower, glabrous or hairy; tube campanulate, funnel-shaped or cylindric; lobes

lanceolate, linear, or lanceolate-elliptic, longer or shorter than the tube. *Stamens* 4, affixed at the base or middle of the corolla-tube or sometimes in the corolla-throat, exerted; filaments filamentous; anthers linear or oblong-linear, sometimes sagittate at the base. *Ovary* 2-chambered, with a single ovule in each chamber; glabrous or hairy; styles usually 2, hairy, exerted, rarely in some bisexual flowers the style simple but divided into 2 long-linear arms above and glabrous. *Fruit* separating into 2 mericarps; mericarps convex on one face and flat on the other. *Seed* conforms to the shape of the mericarp; embryo small, straight; cotyledons linear, obovate, or oblong; radicle linear or terete, as long as or shorter than the cotyledons.

Low shrubs or herbs; leaves opposite or ternately verticillate, very rarely 4-nate, usually ericoid, rarely ovate or oblong; stipules adhering to the petiole at the base, drawn out into a single tooth, rarely into 2 or 3 teeth in the middle; flowers axillary, sessile, rarely paniced, small, with 2—3 bracts at the base of the ovary.

Species about 50, mostly African, but a few native of Madagascar; between 25 and 30 species found in South Africa, widely distributed. (Type: *A. aethiopicum* Linn.)

8439 37. *NENAX* Gaertn., Fruct., vol. 1, p. 165, t. 32 (1788)
(*Ambraria* Cruse)

Flowers bisexual or unisexual or both. *Calyx* almost truncate or with 4—5 small lobes. *Corolla* 4—5-lobed, glabrous; tube funnel-shaped; lobes linear, broadly lanceolate or linear-oblong, longer than the tube, sometimes a corolla-tube absent and the corolla represented by 4 linear lobes. *Stamens* 4—5, affixed at the base of the corolla-tube, exerted; filaments filamentous; anthers linear or oblong. *Ovary* 2-chambered, with a single ovule in each chamber, hairy; styles 2, linear, long-exserted. *Fruit* obovate, obscurely angled, 4-locular or 3-locular by the fusion of the 2 vacant loculi. *Seeds* 2, solitary in two of the loculi, sometimes each seed provided with a balloon-like enlargement of the pericarp and the two together resembling an inflated capsule.

Perennial woody deciduous shrublets; leaves ericoid, opposite; stipules none or very minute; inflorescence sometimes in 2 opposite congested dichasial cymes or flowers axillary and solitary.

An endemic genus of 5 species, recorded from many of the central districts and from the Cape Peninsula. (Type: *N. acerosa* Gaertn.)

8443 38. *CARPACOCE* Sond., in Harv. & Sond. Fl. Cap., vol. 3, p. 32
(1864—65)

Flowers unisexual and bisexual. *Calyx* 5-partite to the base, longer than the corolla, glabrous; lobes linear, sometimes 1—2-lobes developed and the others tooth-like. *Corolla* 5-lobed, rarely 6—7-lobed, glabrous; tube narrowly funnel-shaped or cylindric; lobes linear-lanceolate or linear spathulate, longer than the tube, crested behind at the apex, sometimes tailed at the apex, rarely papillose and hooked at the apex. *Stamens* 5, rarely 6—7, affixed in the corolla-throat or at the middle of the corolla-tube, exerted; filaments filamentous; anthers linear-oblong. *Ovary* 1-chambered, rarely 2-chambered, with a solitary ovule in each chamber; style 1, rarely styles 2, hairy.

Low compact rigid shrubs, more rarely lax and growing in marshy places; leaves opposite, ericoid, shortly connate at the base or connate into a distinct sheath; stipules cleft into bristles or minute or absent; flowers axillary and solitary.

An endemic genus of 4 species, extending from the Clanwilliam district, through the south-eastern districts to the George and Knysna districts. (Type: *C. scabra* (Thunb.) Sond.)

8449 9. CROCYLLIS E. Mey. in Drège Zwei Pfl. Docum., p. 176 (1843)

Flowers unisexual. *Calyx* 5-lobed, occasionally 6-lobed, longer than the corolla-tube, pilose; lobes lanceolate. *Corolla* 5-lobed, pilose; tube campanulate; lobes lanceolate, longer than the tube. *Stamens* 5; anthers linear. *Ovary* 2-chambered, with a solitary ovule in each chamber, pilose; style divided from about the middle into 2 long-linear papillate lobes. *Fruit* (when young) obovate in outline, separating into 2 hirsute mericarps.

A shrub up to 5 ft. high, with the branchlets ending in spines; leaves opposite, ericoid; stipules small; inflorescence a short terminal panicle.

Endemic species 1, recorded from South West Africa and Namaqualand. (Type: *C. anthospermoides* E. Mey.)

NOTE.—This is the plant described by Sonder in the *Flora Capensis*, vol. 3, p. 32, as *Anthospermum crocyllis*. He describes the flowers as "hermaphrodite". The herbarium material is very poor and in the only specimen I examined the flowers were female with functionless stamens present.—E. P. P.

8450 40. OTIOPHORA Zucc. in Abh. Akad. München, vol. 1, p. 315 (1832)

Flowers bisexual. *Calyx* with one segment elongated and as long as the corolla-tube; elongated segment lanceolate and foliaceous, the other lobes minute. *Corolla* 5-lobed, glabrous; tube narrowly cylindric, sometimes bearded in the throat; lobes linear-lanceolate, much shorter than the tube. *Stamens* 5, affixed in the corolla-mouth, exserted; filaments filamentous; anthers oblong. *Ovary* 2-chambered, with a single ovule in each chamber, tomentose; style filamentous, exserted, divided into 2 long arms above. *Fruit* not seen.

Small shrubs 6—12 in. high, with stems arising from a woody rootstock; leaves opposite or ternate, lanceolate, entire, hairy; stipules lanceolate, foliaceous; inflorescence a terminal pseudo-spike.

Described species 14, natives of Africa and Madagascar; 4 species recorded from the Transvaal and Swaziland. (Type: *O. scabra* Zucc.)

8464 41. RICHARDIA Linn., Sp. Pl., ed. 1, p. 330 (1753)

(*Richardsonia* Kunth)

Calyx 4—8 lobed; tube not produced above the ovary; lobes lanceolate or subulate, persistent. *Corolla* 3—5-lobed; tube funnel-shaped; lobes ovate or lanceolate. *Stamens* 3—5, affixed in the corolla-throat, exserted; filaments filiform; anthers linear or oblong. *Ovary* turbinate or subglobose, 3—4-chambered, with a solitary ovule in each chamber; style filiform, exserted; stigmas 3—4, linear or spatulate. *Fruit* crowned with the persistent calyx, separating into cocci; cocci muricate or papillose, rarely smooth. *Seed* elliptic-oblong, convex on the back; testa membranous; embryo small in relation to the size of the seed, straight; cotyledons oblong; radicle terete, longer than the cotyledons; endosperm fleshy or horny.

Erect or prostrate hispid or villous herbs; leaves opposite, sessile or shortly petioled, ovate; stipules multisetose, adnate to the petioles; inflorescence usually a dense terminal head surrounded by an involucre of leaves.

An American genus of 8 or 9 species, one of which has become naturalized in South Africa. (Type: *R. scabra* Linn.)

8467 42. HYDROPHYLAX Linn. f., Suppl., p. 126 (1781)

Calyx of 4 stiffly membranous short lobes, 2 of which are aristate. *Corolla* 4-lobed, glabrous; tube funnel-shaped, sparsely hairy within; lobes elliptic

or ovate, shorter than the tube. *Stamens* 4, affixed in the corolla-mouth, exserted; filaments much shorter than the anthers; anthers linear or linear-oblong. *Disc* tumid. *Ovary* 2-chambered, with a single ovule in each chamber; style terete, subexserted, divided about half-way up into 2 long-linear lobes. *Fruit* a large subcorky berry, angular, lanceolate or ovate-oblong in outline, crowned with the persistent calyx. *Seeds* linear-oblong in outline, convex on the back, furrowed on the face; embryo straight; endosperm cartilaginous.

Subsucculent creeping herbs of the sea-shore; leaves sessile, ovate or oblong; stipules adnate to the base of the leaves and forming a sheath; flowers solitary or in pairs, sessile or subsessile.

Species 3, natives of Africa, Madagascar, and India; 1 species in South Africa, extending from Zululand to the Bathurst district. (Type: *H. maritima* Linn. f.)

8473 43. BORRERIA G. F. Mey., Prim. Fl. Esseq., p. 79, t. 1 (1818)

Calyx 4-lobed, glabrous; tube shallowly saucer-shaped; lobes linear from an ovate base, ciliate. *Corolla* 4-lobed, glabrous; tube funnel-shaped; lobes unequal, oblong or ovate oblong. *Stamens* 4, affixed in the corolla-mouth, exserted; filaments linear, slightly longer than the anthers; anthers oblong. *Disc* annular. *Ovary* 2-chambered, with a single ovule in each chamber; style linear, subexserted; stigma of 2 short recurved lobes. *Fruit* splitting into 2 mericarps. *Seed* oblong in outline, convex on the back, grooved on the face; testa thin, membranous; embryo straight; cotyledons ovate; radicle terete, longer than the cotyledons; endosperm cartilaginous.

Erect hairy herbs; leaves opposite, sessile, lanceolate, lanceolate-linear, or elliptic; stipules connate, of several awns; inflorescence globose, in the axils of the leaves.

Many species described and several transferred to other genera, mostly natives of tropical countries; 2 species naturalized in South Africa and recorded from South West Africa, Bechuanaland, the Transvaal, Zululand, Natal, and from the Albany district. (Type: *B. stricta* G. F. Mey.)

8475 44. SPERMACOCE Gaertn., Fruct., vol. 1, p. 122, t. 73, f. 9 (1788)

Flowers unisexual and bisexual. *Calyx* 4-lobed, occasionally 6-lobed or 2-lobed, about as long as the corolla-tube, glabrous; tube not produced above the ovary; lobes linear or ovate-linear. *Corolla* 4-lobed, occasionally 5-lobed, rarely 3- or 2-lobed, glabrous without; tube funnel-shaped or urceolate; lobes longer than the tube, ovate, pilose on the inner face. *Stamens* 4, occasionally 5, rarely 3 or 2, affixed near the base of the corolla-tube, included; filaments shorter than the anthers; anthers globose. *Disc* annular. *Ovary* 2-chambered, with a single ovule in each chamber; style very short, included, or equalling the corolla-tube, or exserted; stigma of 2 very short lobes. *Fruit* separating into 2 mericarps. *Seed* oblong in outline, convex on one face, grooved on the other; testa membranous, thin; embryo small in relation to the size of the seed, straight; cotyledons ovate-oblong; radicle terete, longer than the cotyledons.

Erect herbs with the stems from a stout rootstock; leaves opposite, sessile, linear or lanceolate, entire, glabrous; stipules adnate to the base of the leaves, produced into several awns; inflorescence globose, terminal in the axils of the leaves.

Many species described from tropical and subtropical countries but probably not all belonging to this genus; 1 species recorded from the Transvaal, Swaziland, Zululand, Natal, and Pondoland. (Type: *S. tenuior* Linn.)

8479 **45. MITRACARPUS** Zucc. in Schultes Mant., vol. 3, p. 210 (1827)

(*Mitracarpum* Zucc.)

Calyx-teeth 4—5, with 2 often longer than the others, persistent. *Corolla* 4-lobed; tube funnel-shaped, often with a ring of hairs within, naked or villous in the throat. *Stamens* 4, affixed in the corolla-throat, included or exserted; filaments short; anthers oblong. *Disc* annular. *Ovary* 2- (very rarely 3-) chambered, with a single ovule in each chamber; style terete; stigma of 2 short linear branches. *Fruit* a didymous capsule, bursting transversely round the middle. *Seed* globose or oblong in outline, marked on the ventral face with a diagonally placed impressed cross; testa pitted; embryo axile; radicle inferior; endosperm densely fleshy.

Erect or prostrate herbs or subshrubs; leaves opposite, linear, lanceolate, or ovate, with the upper leaves often longer; stipules adnate to the base of the leaves, multi-setose; flowers in dense axillary and terminal heads often surrounded by 4 leaves.

Described species about 50, natives of South America, Africa, and the Pacific Islands; 1 species recorded from the Transvaal and Natal. (Type: *M. scabrous* Zucc.)

NOTE.—As pointed out by T. S. Sprague (*Kew Bulletin*, p. 48, 1929), the spelling "*Mitracarpum*" has crept into the literature by error.—E. P. P.

8486 **46. GALIUM** Linn., Sp. Pl., ed. 1, p. 105 (1753)

Flowers bisexual and unisexual. *Calyx* obsolete. *Corolla* normally 4-partite to the base, occasionally a flower with a 5-partite corolla, glabrous; segments linear or oblong, sometimes acuminate. *Stamens* normally 4, occasionally 5; filaments about as long as or slightly longer than the anthers; anthers oblong. *Disc* annular. *Ovary* usually subglobose, 2-chambered, occasionally a flower with a 3-chambered ovary, with a single ovule in each chamber, glabrous or hairy; styles 2, occasionally 3, usually very short, sometimes connate low down; stigma capitate. *Fruit* dividing into 2 mericarps, occasionally only 1 fertile. *Seed* kidney-shaped or subglobose; testa membranous; embryo straight or slightly curved; cotyledons oblong; radicle thick and terete or linear, as long as or somewhat longer than the cotyledons; endosperm fleshy.

Glabrous hispid scabrous or tomentose herbs, rarely shrubby at the base, with 4-angled branches; leaves opposite or in whorls of three or more, obovate, lanceolate, linear, or setaceous; stipules resembling the leaves; inflorescence an axillary and terminal cyme; flowers small.

Described species between 600 and 700, found in most parts of the world; 14 or more in South Africa and fairly generally distributed. (Type: *G. verum* Linn.)

8489 **47. RUBIA** Linn., Sp. Pl., ed. 1, p. 109 (1753)

Calyx obsolete. *Corolla* normally 5-partite, occasionally 4-partite, glabrous; tube shallowly saucer-shaped; lobes ovate, acuminate. *Stamens* normally 5, occasionally 4, affixed on the rim of the corolla-tube; filaments linear, longer than the anthers; anthers subglobose. *Disc* annular. *Ovary* subglobose, 2-chambered, with a single ovule in each chamber, with a few stalked glands at the apex outside the disc; styles 2 or styles connate in the lower half; stigmas capitate. *Fruit* splitting into 2 mericarps. *Seed* subglobose; embryo slightly curved; cotyledons elliptic or obovate-oblong; radicle terete, about as long as the cotyledons; endosperm fleshy.

Herbs or subshrubs, with diffuse much-branched tetragonal stems; leaves opposite, petioled, cordate, entire; stipules 1—2, rarely 3—4, resembling the leaves so

that the leaves appear to be in whorls of 4 to 10; inflorescence an axillary and terminal cyme; flowers small.

Described species between 90 and 100, natives of the Mediterranean region, Africa, Asia, and America; 4 species found in South Africa extending from the Transvaal, Basutoland, Natal, and the eastern districts to the Riversdale district; also recorded from the Queenstown district. (Type: *R. tinctorum* Linn.)

175. VALERIANACEAE

Flowers bisexual or unisexual by abortion. *Calyx* often small, sometimes obsolete, often enlarging as the flower matures and then variously lobed; lobes sometimes feathery. *Corolla* gamopetalous; tube often attenuated at the base, sometimes gibbous or spurred at the base, often widened at the throat; limb 3—5-fid, equal, oblique or 2-lipped; lobes imbricate. *Stamens* 1—4, inserted above or below the middle of the corolla-tube, alternating with the corolla-lobes, often exserted; filaments free; anthers versatile, opening by 2 longitudinal slits. *Ovary* inferior, 3-chambered, but only 1 chamber fertile and containing a single pendulous ovule; style linear, filiform or terete; stigma subtruncate, entire or divided into 2—3 very short lobes. *Fruit* dry, resembling an achene, crowned with the sometimes enlarged calyx. *Seed* pendulous; embryo straight; cotyledons flat; endosperm very thin or 0.

Annual or perennial herbs, rarely half-shrubby, with a characteristic odour; leaves opposite, very often radical or crowded at the base of the stem, entire or toothed, with the cauline leaves sometimes few, small or 0 and the lower leaves pinnatifid or once, twice, or three times pinnatisect; stipules 0; inflorescence usually a dense dichotomous cyme which is sometimes laxly corymbose or paniced; bracts present; bracteoles usually absent.

Genera 12; described species between 600 and 700, mostly natives of the temperate and frigid zone of the northern hemisphere; many species in western America and the Andes.

NOTE.—In both the South African species the 3 chambers of the ovary are not easily seen; the ovary at first sight appears to be 1-chambered.—E. P. P.

Calyx spathaceous, not produced into plumose bristles in the fruit

1. *Valerianella* Miller

Calyx a crenate ring, produced into plumose bristles in the fruit

2. *Valeriana* Linn.

8529 1. VALERIANELLA Miller, Gard. Dict. Abridg. Ed., p. 4 (1754)

Calyx slightly shorter than the corolla-tube, spathaceous, setose on the margin or entire, persistent, sometimes obsolete. *Corolla* 5-lobed, glabrous; tube funnel-shaped, sometimes with a slight gibbosity at the base; lobes elliptic, shorter than the tube. *Stamens* 3, affixed deep in the corolla-throat or about the middle of the corolla-tube, slightly exserted; filaments linear, longer than the anthers; anthers globose. *Ovary* 3-chambered above, 1-chambered below, with only 1 chamber bearing a solitary pendulous ovule; style linear, slightly exserted; stigma minutely 3-fid.

Annuals; leaves opposite, entire or the upper ones often toothed or incise-pinnatifid; inflorescence a subfastigate or subglobose cyme; flowers sessile, subtended by a bract.

A genus widely spread over the temperate regions of the northern hemisphere; about 100 species described; 1 species recorded from the Swellendam district of the Cape Province.

8532

2. VALERIANA Linn., Sp. Pl., ed. 1, p. 31 (1753)

Calyx sometimes represented by a crenate ring, sometimes eventually developing into 5—15 plumose-ciliate bristles. *Corolla* 5-lobed, glabrous; tube campanulate, sometimes slightly gibbous at the base, sometimes pilose within; lobes ovate-elliptic, shorter than the tube. *Stamens* 3, rarely 1—2 by abortion, affixed in the corolla-throat, exserted; filaments linear, longer than the anthers; anthers globose. *Ovary* 3-chambered above, 1-chambered below, with only 1 chamber fertile and containing a single ovule; style terete, exserted; stigma 3-lobed. *Fruit* compressed, with 1 nerve on the back and 2 nerves on the face, rarely with the empty loculi equalling the fertile loculus, at length crowned with the pappus-like calyx-limb. *Fruit* ovoid; pericarp membranous. *Seed* solitary; embryo straight; cotyledons oblong or obovate-oblong; radicle short, conical, not differentiated from the cotyledons; endosperm 0.

Perennial herbs or half-shrubs, usually glabrous; radical leaves entire or toothed; cauline leaves all pinnatifid, or once, twice, or three times pinnatisect (pinnatifid in the South African species); inflorescence a cyme or a dense or interrupted spike; cymes sometimes laxly corymbose or variously paniced; bracts free, rarely connate.

Described species about 500, natives of the temperate and cold regions of the northern hemisphere, also found in North and South America along the Andes; a few in Brazil and India; 1 species in South Africa, extending from the Transvaal, through the coastal districts to the Cape; also recorded from Basutoland, the eastern Orange Free State, and the Queenstown district. (Type: *V. officinalis* Linn.)

176. DIPSACACEAE

Flowers bisexual. *Calyx-tube* often constricted above the ovary; limb cup-shaped, disciform, or divided into 5—20 stellately spreading bristles. *Corolla* gamopetalous, 2—5-lobed, somewhat 2-lipped, usually pilose without; tube gradually widening from the base upwards, usually pilose within; lobes unequal, imbricate, usually oblong, shorter than the corolla-tube. *Stamens* 2—4, affixed in the upper part of the corolla-tube, alternating with the corolla-lobes, often exserted; filaments linear, longer than the anthers; anthers linear-oblong, versatile, 2-theous opening by longitudinal slits. *Ovary* inferior, 1-chambered, with a single pendulous ovule; style filiform or linear, exserted; stigma undivided or with a groove on one side, globose, disc-like, oblong, or elongated. *Fruit* a dry utricle, crowned with the enlarged persistent calyx-limb and enclosed in a cup-like involucre. *Seed* pendulous; embryo straight; endosperm fleshy, thin, and copious.

Annual or perennial herbs, undershrubs, or rarely shrubs, glabrous or variously hairy; leaves opposite or rarely whorled, entire, toothed, lobed or cut; stipules 0; inflorescence a head, surrounded by an involucre, with each flower in a calyx-like dry persistent involucre.

Genera 9; species over 300, mostly massed in the Mediterranean region and the Orient, less numerous in Africa, Europe, and Asia.

Calyx very small, pappus-like; involucre bracts in several rows

1. *Cephalaria* Schrad.

Calyx of 5 long awns; involucre bracts in 1—2 rows

2. *Scabiosa* Linn.

8541 1. CEPHALARIA Schrad., Catal. Sem. Horti Goetting (1814)

Calyx very small, pappus-like, saucer-shaped, sometimes flat, shallowly lobed, usually ciliate. *Corolla* 4-lobed, pilose without; tube funnel-shaped

or narrowly funnel-shaped, hairy within; lobes often unequal, oblong, obovate, elliptic, or oblong-lanceolate, shorter than the tube. *Stamens* 4, affixed in the corolla-throat, exserted; filaments linear, longer than the anthers; anthers linear or oblong. *Ovary* 1-chambered, usually ribbed, with a single ovule; style included or exserted; stigma simple, linear, and grooved on one side or stigma thickened or of 2 unequal lobes.

Annual or perennial herbs, often from a woody rootstock, often rigid, glabrous or hairy; leaves opposite, linear, elliptic, lanceolate, orbicular, often attenuated into a petiole or distinctly petioled, entire, toothed, or lobed, often radical; inflorescence a head on a long peduncle, rarely sessile; flowers surrounded by an involucre which is often ciliate, subtended by a bract; bracts surrounding the head, glabrous or hairy, sometimes ciliate.

Described species 78, natives of Europe, Asia, and Africa; 9 species in South Africa, ranging from the Transvaal, Swaziland, Basutoland, Zululand, Natal, East Griqualand, the eastern Orange Free State, through the coastal belt to the Caledon and Cape districts. (Type: *C. alpina* (L.) Roem. & Schult.)

NOTE.—An occasional flower has 5 corolla-lobes and 5 stamens.—E. P. P.

8546

2. SCABIOSA Linn., Sp. Pl., ed. 1, p. 98 (1753)

Calyx of 5 long awns almost as long as the corolla. *Corolla* subbilabiate, 4—5-lobed, pilose without; tube gradually narrowing from the apex to the base, pilose within; lobes oblong, shorter than the tube. *Stamens* 4, affixed in the upper part of the corolla-tube, exserted; filaments linear, longer than the anthers; anthers linear-oblong. *Ovary* 1-chambered, with a solitary ovule; style linear, shortly exserted; stigma subcapitate with a groove on one side, rarely very shortly 2-lobed. *Fruit* crowned with the persistent calyx. *Seed* somewhat ellipsoid; embryo straight; cotyledons oblong, fleshy; radicle subglobose; endosperm scanty.

Annual or perennial herbs, sometimes up to 6 ft. high, often from a woody rootstock, sometimes more or less shrubby at the base, variously hairy, rarely glabrous; leaves opposite, often radical, variously shaped, entire, toothed, lobed, or pinnatisect; inflorescence a head on a long peduncle, rarely sessile; flowers subtended by a bract and surrounded at the base by an involucre which is strongly ribbed and expanded above into a saucer-shaped membranous structure.

Described species between 220 and 230, natives of Europe, the Mediterranean region, India, and Africa; 9 species occur in South Africa and extend from the Transvaal, Swaziland, Zululand, Natal, Basutoland, the Orange Free State, through the coastal districts to the Cape; also recorded from the Aliwal North, Queenstown districts, and from Griqualand West. (Type: *S. columbaria* Linn.)

177. CUCURBITACEAE

Plants monoecious or dioecious. *Male flower*:—*Calyx-tube* campanulate, tubular, funnel-shaped or cylindric; lobes 5, rarely 3—6, imbricate. *Corolla* 5- (rarely 3—6-) lobed; lobes free, rarely joined, rarely clawed, sometimes lobed or fimbriate, valvate or the margins involute. *Stamens* very often 3, rarely 5, very rarely 1, 2, or 4, sometimes a staminode present; filaments free or joined, usually shorter than the anthers, more rarely longer; anthers free or cohering or in a head, 1- or 2-theccous, often anthers 1- and 2-theccous in same flower; thecae straight, curved, or variously bent; connective sometimes produced into an apical appendage. *Rudimentary pistil* present or absent. *Female flower*:—*Calyx* and *corolla* as in the male. *Staminodes* present or absent. *Ovary* inferior, more rarely free at the apex, usually 3-chambered, more rarely 1—2- or spuriously 4—6-chambered, with many, rarely 1—2, ovules in each chamber; style terminal, simple or divided at the

apex, sometimes surrounded at the base by a disc or cup-like structure; stigma various, usually of fleshy lobes. *Fruit* very often a berry, fleshy or corky (a *pepo*), indehiscent or rarely dehiscent, usually many-seeded. *Seeds* often flattened, smooth or variously pitted, sometimes hairy; testa leathery or crustaceous; tegmen membranous or hyaline; cotyledons conforming to the shape of the seed, thick or flattened; radicle usually conical; endosperm 0.

Herbs, or shrubs, or undershrubs, prostrate or scandent, smooth, scabrid, or pubescent, rarely spiny, often with the stems from a large tubular or woody rootstock; leaves alternate, petioled, simple, lobed, palmatipartite, or pedate, often cordate, very rarely leaves not developed; petiole very rarely biglandular at the apex; stipuliform bracts very rarely present at the axils of the leaves; tendrils solitary, simple or 2-fid to multi-fid; inflorescence often a panicle, rarely a raceme or a sub-umbel or flowers often solitary, usually white or yellow, very rarely blue or red.

Genera about 100; species between 700 and 800, found in all warm countries, especially the tropics.

1. A rigid shrub, spiny; leaves not developed so that the plant appears leafless **9. Acanthosicyos** Welw.
Prostrate or scandent herbs, rarely undershrubs, leaves well-developed ... 2
2. Petioles biglandular at the apex ... **12. Sphaerosicyos** Hook. fil.
Petioles without glands at the apex 3
3. Stamens 4, with a rudimentary fifth stamen **1. Gerrardanthus** Harv.
Stamens 3, rarely 5, but, if so, then all fertile 4
4. Calyx-tube with incurved scales at the base within 5
Calyx-tube without scales within 6
5. Ovules numerous **10. Momordica** Linn.
Ovules 2 **11. Raphanocarpus** Hook. fil.
6. A stipuliform bract at the base of the petiole 7
Stipuliform bracts absent 8
7. Style inserted on a disc **3. Dactyliandra** Hook. fil.
Style not inserted on a disc **4. Blastania** Kotschy & Peyr.
8. Calyx-tube in male flower elongated, tubular, funnel-shaped or cylindric ... 9
Calyx-tube in male flower usually campanulate but not elongated ... 10
9. Rudimentary pistil evident in the male flower **15. Trochomeria** Hook. fil.
Rudimentary pistil absent from the male flower or represented by a gland **16. Peponium** Engl.
10. Style surrounded at the base by a disc 11
Style not surrounded at the base by a disc 13
11. Rudimentary pistil in the male flower none or gland-like **7. Kedrostis** Medic.
Rudimentary pistil in the male flower evident 12
12. Connective of anthers produced into an evident appendage **14. Cucumis** Linn.
Connective of anthers very rarely produced, then filaments longer than the anthers **2. Melothria** Linn.

13. Staminodes in female flower none or minute

				8. Corallocarpus Welw.				
Staminodes in female flower evident				...	...	...	...	14
14. Male flowers solitary, rarely fascicled				13. Citrullus Forsk.				
Male flowers in racemes				...	...	...	...	15
15. Plants dioecious				...	...	...	...
Plants monoecious				...	...	...	...	16
16. Staminodes in female flower 3				...	5. Pisosperma Sond.			
Staminodes in female flower 5				...	6. Toxanthera Hook. fil.			

NOTE.—In describing the calyx-tube, 1 am only referring to that portion of the calyx above the ovary.—E. P. P.

8555 1. GERRARDANTHUS Harv. ex Benth. et Hook. f. Gen. Pl., vol. 1, p. 840 (1867)

Plants dioecious. *Male flowers*.—*Calyx* small, rotate, 5-lobed, glabrous or hairy. *Corolla* rotate, deeply 5-partite; segments somewhat thick, linear-oblong or ovate-oblong, with 2 rather larger than the others, with the margins strongly and broadly recurved. *Stamens* 4, with a fifth imperfect stamen, connivent in pairs; filaments linear, somewhat incurved, about as long as the anthers, fleshy; anthers 1-theous, slightly curved, sometimes with the connective produced into a tail longer than the theca. *Ovary* 0; rudimentary style sometimes present. *Female flowers*.—*Calyx* and *corolla* as in the male. *Stamens* 0. *Ovary* 3-chambered, with pendulous ovules in each chamber, glabrous or hairy; style short, conical; stigmas 3, shortly reniform, with the sinus uppermost. *Fruit* dry, terete, ribbed, 3-valved at the apex. *Seed* oblong-lanceolate in outline, biconvex, with a membranous wing as long as the seed at one end; testa pustulate, somewhat woody; tegmen thin, membranous; embryo straight, lanceolate in outline; cotyledons thick, fleshy; radicle conical, acute.

A climbing or scandent plant, with (always ?) a large tuber; leaves normally ovate, cordate at the base, glabrous or hairy; tendrils 2-fid; male flowers on long pedicels in subumbellate fascicles.

An African genus of 8 species; 2 species occur in South Africa and are recorded from Natal to the East London district. (Type: *G. macrorhiza* Harv.)

8562 2. MELOTHRIA Linn., Sp. Pl., ed. 1, p. 35 (1753)

(*Mukia* Arn., *Zehneria* Endl. ex Fl. Cap. partly)

Plants monoecious or rarely dioecious. *Male flowers*.—*Calyx* campanulate or tubular, 5-toothed or -lobed; teeth often very short. *Corolla* 5-partite, glabrous, villous, or pilose within; segments ovate-oblong or linear-oblong, sometimes acute. *Stamens* normally 3, rarely 2, 4, or 5, affixed at the base of or on the calyx-tube; filaments linear, longer than the anthers, free; anthers 2-theous, free or very rarely slightly cohering, oblong or sub-orbicular, with one anther 1-theous and the others 2-theous, sometimes all 2-theous, with the thecae straight or rarely curved and with the connective very rarely produced at the apex. *Rudimentary pistil* globose or annular, rarely 3-lobed. *Female flowers*.—*Calyx* and *corolla* as in the male. *Staminodes* normally 3 or 0, very rarely bearing anthers. *Ovary* ovoid, subglobose, globose, or fusiform, with few to many ovules on 3, more rarely 2, placentas, sometimes hispid; style short, surrounded by an annular disc; stigmas thick, 3, very rarely 2, or the stigma 3-lobed. *Fruit* a berry, globose, ovoid, or fusiform, sometimes pendulous on a thread-like peduncle, some-

times beaked, few- to many-seeded. *Seed* ovoid or globose, strongly compressed or rarely tumid; testa subcrustaceous, sometimes pitted or tuberculed, smooth or scorbiculate; tegmen thin, membranous; embryo straight; cotyledons oblong or ovate, thick, fleshy; radicle conical, blunt or subacute.

Herbs, prostrate or climbing, often scabrid or subtomentose; leaves obtuse, entire, 3—7-angled, toothed, lobed or palmatisect, sometimes cordate at the base, sometimes scurfy; tendrils simple; male flowers fascicled, in racemes or corymbs, rarely solitary; female flowers as in the male, but sometimes on long and slender pedicels.

Described species 105, found in most warm countries; 13 species in South Africa, recorded from South West Africa, Griqualand West, the Transvaal, and Natal to Alexandria district; also recorded from Queenstown district. (Type: *M. pendula* Linn.)

8563 **3. DACTYLIANDRA** Hook. f., in *Fl. Trop. Afr.*, vol. 2, p. 557 (1871)

Plants monoecious. *Male flowers*:—*Calyx-tube* campanulate; lobes 5. subulate or triangular. *Corolla* shortly campanulate, 5-lobed to below the middle, with a ring of hairs with globose apices in the throat; lobes oblong or oblong-elliptic, pubescent or glandular-papillose. *Stamens* 3, inserted near the base of the calyx-tube; filaments free, linear, somewhat longer than the anthers; anthers different, one being 1-theous and two being 2-theous; connective not produced above the thecae. *Pistil* rudimentary. *Female flower*:—*Calyx* and *corolla* as in the male. *Staminodes* 0. *Ovary* oblong in outline, with 3 placentas; style columnar, inserted in a disc; stigma subcapitate, 3-lobed. *Fruit* small, globose, with few to many seeds. *Seed* irregularly oblong in outline, truncate at the ends, pointed on one side, with both surfaces flattish, sinuate on the edges; testa very thick.

Scabrid scandent or prostrate herbs; leaves 3-partite or 5—7-lobed, petioled, with a stipuliform bract at the base of the petiole; tendrils simple; male inflorescence subumbellate; female flowers solitary in different axils from the male inflorescence.

An African genus of 2 species, one of which is found in South West Africa. (Type: *D. welwitschii* Hook. f.)

NOTE.—In the description in the *Flora of Tropical Africa*, the number of stamens is said to be 5; this is an obvious misprint.—E. P. P.

8564 **4. BLASTANIA** Kotschy et Peyr., *Pl. Tinn.*, p. 15, t. 7 (1865—66)

Plants monoecious. *Male flowers*:—*Calyx-tube* short, turbinate or subcampanulate; lobes 5, small, subulate. *Corolla* rotate, 5-parted; segments ovate, subacute. *Stamens* 3, free; filaments very short; anthers small, one being 1-theous and the others 2-theous; thecae straight; connective not produced. *Rudimentary pistil* 0. *Female flowers*:—*Calyx* and *corolla* as in the male. *Staminodes* 0. *Ovary* ovoid, with few ovules on 2—3 placentas; style columnar, not on an annular disc; stigmas 2—3. *Fruit* small, subglobose or subquadrate in outline, oblique, 2- or few-seeded, indehiscent. *Seed* ovoid, strongly compressed, ovate in outline and boat-shaped or concave above, convex beneath, smooth, with an acute margin.

Prostrate, rarely scandent, herbs, scabrid, in the dried state often turning black; leaves orbicular, deeply cordate, 5—7-lobed or -partite; tendrils simple; male inflorescence a raceme; female flowers solitary, shortly pedicelled, in the same axil as the male; bracts stipule-like, orbicular or oblong, toothed or ciliate.

Species 2, found in Africa, Arabia, east India, and Ceylon; 1 species recorded from Ngamiland. (Type: *B. fimbripula* (Fenzl) Kotschy & Peyr.)

8566 **5. PISOSPERMA** Sond., in Hårv. & Sond., Fl. Cap., vol. 2, p. 498 (1862)

Plants monoecious. *Male flower*.—*Calyx* campanulate or cylindric-campanulate; lobes 5, linear-oblong or ovate and subacuminate. *Corolla* 5-partite; lobes elliptic, glandular without. *Stamens* 3, inserted in the calyx-tube; filaments very short, free; anthers connate, with one anther 1-theous and the others 2-theous; thecae linear, straight; connective scarcely produced at the apex. *Pistil* globose or depressed. *Female flowers*.—*Calyx* and *corolla* as in the male. *Staminodes* 3, linear. *Ovary* ovoid, with 3 placentas, and many ovules; style elongated, not surrounded by a disc at the base; stigmas 3, thick, subbilobed. *Fruit* subglobose, shortly rostrate, indehiscent, 6—12-seeded. *Seed* globose; testa subcrustaceous; tegmen thin, membranous; cotyledons broadly elliptic or suborbicular, thick, fleshy; radicle shortly conical.

A small scabrid herb with a short stem arising from a large tuber; branches prostrate; leaves palmately 5-lobed, shortly petioled; tendrils simple; male inflorescence racemose with the flowers on long pedicels; female flowers solitary, shortly pedicelled.

Endemic; species 1, recorded from Basutoland, from the eastern Orange Free State and the Burghersdorp district. (Type: *P. capense* Sond.)

8567 **6. TOXANTHERA** Hook. fil., in Hook. Icon Pl., vol. 15, t. 1421 (1883)

Plants monoecious. *Male flowers*.—*Calyx* 5-lobed, campanulate; lobes lanceolate-linear, acuminate, glandular-hairy. *Corolla* 5-partite; segments ovate, oblong, elliptic-oblong, obtuse, glandular-pubescent without. *Stamens* 3; filaments free; anthers cohering, with one anther 1-theous, and the others 2-theous; thecae slightly curved; connective not produced. *Pistil* 0. *Female flowers*.—*Calyx* and *corolla* same as in the male. *Staminodes* 5, filiform, curved. *Ovary* narrowing into a beak, with 2 placentas and many ovules; style columnar, not surrounded by a disc; stigmas 2, large, flabelliform and deflexed or stigma single, entire and reflexed. *Fruit* fleshy, ellipsoid, beaked, several-seeded. *Seed* globose or ellipsoid; testa crustaceous smooth; tegmen thin, membranous, green; cotyledons obovate, with one slightly folded over the other, thick fleshy; radicle very shortly conical.

Scandent herbs, scabrous or almost glabrous; leaves petioled, suborbicular, cordate, entire or 3—7-lobed; tendrils simple or 2-fid; male inflorescence racemose; female flowers solitary.

Endemic; species 3, recorded from Ngamiland, the Transvaal, Natal, and the Komgha and Kentani districts. (Type: *T. natalensis* Hook. fil.)

8568 **7. KEDROSTIS** Medik., Phil. Bot., vol. 2, p. 69 (1791)
(*Coniandra* Schrad.)

Plants monoecious, rarely dioecious. *Male flowers*.—*Calyx-tube* campanulate, sometimes pilose within; lobes lanceolate-linear, ovate-oblong, or subulate, with a few glandular hairs. *Corolla* 5-partite; lobes ovate or oblong-linear, often pubescent or glandular-hairy without. *Stamens* normally 3, rarely 4 or 5, inserted on the calyx-tube; filaments free, about as long as the anthers; when 3 stamens present then one anther 1-theous and two anthers 2-theous, when 5 stamens present then all anthers 1-theous; thecae straight or more or less curved; connective very often produced and often bifid or bipartite. *Pistil* 0, or gland-like. *Female flowers*.—*Calyx* and *corolla* as in the male. *Staminodes* 0 or 3 small staminodes present. *Ovary* often ovoid or elliptic in outline, beaked, with 2—3 placentas and few, rarely many,

ovules, sometimes hairy with long gland-stalked hairs; style columnar, not, or but slightly, surrounded by a disc at the base; stigmas 2 or 3, broad or narrow, and each stigma often very shortly bilobed. *Fruit* a berry, ovoid, often beaked, few-seeded. *Seeds* often globose and with a margin; testa crustaceous, punctate or slightly pustulate, or often smooth; tegmen membranous, greenish; cotyledons thick, elliptic, sometimes convex on the outer face, with one slightly folded round the other; radicle conical and acute or very short and appearing as a small cap.

Scandent or prostrate herbs, glabrous, scabrid, or sometimes subfleshy; leaves entire, toothed, lobed or partite; tendrils simple, very rarely bifid; male inflorescence racemose or subcorymbose; female flowers solitary or clustered, shortly peduncled.

Species 33, natives of Africa and eastern India; 19 species in South Africa with a fairly general distribution. (Type: *K. africana* (L.) Cogn.)

8569 8. CORALLOCARPUS Welw., in Benth. et Hook. fil., Gen. Pl., vol. 1, p. 831 (1867)

Plants monoecious, rarely dioecious. *Male flowers*:—*Calyx-tube* broadly campanulate; lobes 5, short. *Corolla* 5-partite, segments ovate-oblong. *Stamens* 3, free, inserted on the calyx-tube; filaments very short; anthers entire or bipartite, glabrous with one anther 1-theous and the others 2-theous; thecae straight; connective often bifid, dilated or produced at the apex. *Pistil* minute. *Female flower*:—*Calyx* and *corolla* as in the male. *Staminodes* 0 or minute. *Ovary* ovoid, often beaked, 2—3-chambered, with few ovules; style straight, not surrounded by a disc at the base; stigmas 3-, rarely 2—4-lobed. *Fruit* a fleshy berry, ovoid or ellipsoid, rarely globose, obtuse or beaked, few-seeded. *Seeds* obovoid, swollen or subglobose; cotyledons obovate, thick, fleshy; radicle small, conical.

Scandent or prostrate herbs, rarely erect shrubs, scabrid or subtomentose; leaves petioled, entire or more or less divided, often subcordate; tendrils simple, very rarely bifid, or absent; male flowers aggregated on elongated peduncles at the apex of the stems, rarely in racemes or fascicled; female flowers sessile or shortly pedicelled, solitary or aggregated, very rarely in racemes.

Species 38, natives of Asia and Africa, with a few species in America; 8 species in South Africa, recorded from South West Africa, Ngamiland, and the Transvaal. (Type: *C. welwitschii* (Naud.) Hook. fil.)

8590 9. ACANTHOSICYOS Welw., ex Benth. et Hook. fil., Gen. Pl., vol. 1, p. 824 (1867)

Plants dioecious. *Male flowers*:—*Calyx-tube* an obconical cup or more or less campanulate, leathery; lobes ovate. *Corolla* 5-lobed; lobes more or less quadrate, subtruncate and obscurely 3-lobed, ribbed, glandular-papillose. *Stamens* 3 or 5, inserted in the calyx-tube; filaments free, broadly linear, villous; anthers all 2-theous or one anther 1-theous and the rest 2-theous; connective dilated, not produced at the apex. *Pistil* rudimentary, 2-lobed. *Female flowers*:—*Calyx* and *corolla* as in the male, but more leathery. *Ovary* ovoid; with 3—5 placentas and many ovules, tuberculed; stigmas 3—5, either capitate, 2-lobed or depressed and saucer-shaped (all 3 forms observed in the same flower). *Staminodes* present. *Fruit* globose, about the size of a large orange, covered with short protuberances, many-seeded, indehiscent.

A much-branched rigid thorny shrub; leaves much reduced, so that the plant appears to be leafless; male flowers axillary, subfascicled; female flowers solitary. Endemic; species 1, found in South West Africa. (Type: *W. horrida* Welw.)

NOTE.—Cogniaux and Harms (*Das Pflanzenreich*, vol. 4, 275.2, p. 5 (1924) state that a rudimentary pistil is absent in the male flowers. In the only male flower I dissected a well-developed pistil was present and stamens were 5.—E. P. P.

8591 10. MOMORDICA Linn., Sp. Pl., ed. 1, p. 1009 (1753)

Plants monoecious, rarely dioecious. *Male flowers*:—*Calyx-tube* shallowly basin-shaped, cup-shaped, campanulate, or shortly funnel-shaped; lobes ovate-elliptic, rotund, ovate, or lanceolate, sometimes apiculate, sometimes hairy. *Stamens* 3, very rarely 2 or 5; filaments free or somewhat cohering, broadly linear; anthers at first cohering and then free, with one anther 1-theous and the rest 2-theous; thecae bent; connective bilobed, not produced at the apex. *Rudimentary pistil* 0, or represented by a gland. *Female flowers*:—*Calyx* and *corolla* as in the male. *Staminodes* 0 or represented by 3 glands at the base of the style. *Ovary* oblong in outline or fusiform, with 3 placentas and many ovules, sometimes echinate; style slender; stigmas 3, entire or bifid. *Fruit* a berry, oblong in outline, fusiform or cylindric, indehiscent or often 3-valved, sometimes with short protuberances on the margins, few- to many-seeded. *Seed* turgid or flattened, smooth or variously sculptured; testa crustaceous; tegmen thin, membranous; cotyledons elliptic; radicle shortly conical.

Scandent or prostrate herbs, glabrous or hairy; leaves entire, lobed or palmately 3—9-foliate; tendrils simple or bifid; male inflorescence corymbose subumbellate or racemose, or flowers solitary, often with a conspicuous barren bract at the top of the pedicel; female flowers solitary.

Described species 79, more than half of which occur in Africa; 7 species in South Africa, recorded from South West Africa, Bechuanaland, the Transvaal, Natal, to the Komgha district. (Type: *M. charantia* Linn.)

8593 11. RAPHANOCARPUS Hook. fil., Icon. Pl., vol. 11, t. 1084 (1871)

Plants monoecious. *Male flowers*:—*Calyx-tube* shortly campanulate; lobes 5, ovate, lanceolate, or lanceolate-elliptic, sometimes long-acuminate. *Corolla-lobes* 5, elliptic, sometimes acuminate, entire. *Stamens* 3—4; filaments broadly linear, when 4 stamens present then filaments of 3 connate and 1 free; when 3 stamens present then one anther 1-theous and others 2-theous; when 4 stamens present then anthers unequal, one being 2-theous and three 1-theous, with the connective of one anther much larger and broader than the connective of the others; connective not produced at the apex. *Pistil* 0. *Female flowers*:—*Calyx* and *corolla* as in the male, but smaller. *Ovary* slender, fusiform, sulcate, 1-chambered, usually with 2 ovules; stigma short, slender; stigma capitate, bilobed. *Fruit* slender, fusiform, 1-locular, 2-seeded, rarely with 2 loculi. *Seed* ellipsoid; testa crustaceous, smooth; tegmen thin, hyaline; cotyledons more or less obovate, 1 slightly folded over the other; radicle conical, acute.

Prostrate or scandent annual herbs; leaves ovate or cordate-suborbicular, entire or slightly lobed; tendrils simple; male flowers 2—5, with the common peduncle adnate to the apex of the petiole and frequently exerted beyond the leaf-lamina; female flowers solitary or 2-nate, axillary from the base, rarely from the apex of the petiole.

An African genus of 5 species; 3 species in South Africa, recorded from South West Africa and the Transvaal. (Type: *R. kirkii* Hook. fil.)

8597 12. SPHAEROSICYOS Hook. fil., in Benth. et Hook. fil., Gen. Pl., vol. 1, p. 824 (1867)

Plants dioecious. *Male flowers*:—*Calyx-tube* top-shaped or subcampanulate; lobes 5, subulate, each lobe with 2—3 prominent subglobose swellings at the base. *Corolla* 5-lobed; lobes elliptic or oblong, densely papillose on the inner face, papillose on the outer face, villous at the base within, veined and

with 3 prominent ribs on the outer face. *Stamens* 3; filaments broadly linear, free; one anther 1-theous, the others 2-theous; thecae much folded; connective broad and flat, not produced above. *Pistil* 0. *Female flowers*:—*Calyx* and *corolla* as in the male. *Staminodes* 3, small. *Ovary* ellipsoid, with 3 placentas and many ovules; style cylindric; stigma globose, shortly 3-lobed, fleshy. *Fruit* the size of a large orange, many-seeded, with a leathery pericarp. *Seed* elliptic in outline; testa tough, leathery, smooth; tegmen membranous; cotyledons elliptic; radicle conical, subacute.

A perennial scandent or prostrate herb; leaves petioled, palmately lobed with an apiculus at the apex of the lobes, with 2 glands at the apex of the petiole; tendrils bifid, rarely simple; male inflorescence racemose; female flowers solitary.

An African genus of 1 species which also occurs in South Africa and is recorded from the northern Transvaal, Natal, Pondoland, and the coastal area to the Alexandria district. (Type: *S. sphaericus* (E. Mey. ex Sond.) Hook. fil.)

8598 13. CITRULLUS Forsk., Fl. Aegypt-Arab., p. 167 (1775)

Plants monoecious or dioecious. *Male flower*:—*Calyx-tube* shallowly saucer-shaped or broadly campanulate; lobes 5, linear. *Corolla* 5-lobed; lobes elliptic, oblong, or ovate-oblong, glandular-hairy or setose without. *Stamens* 3, occasionally 4, inserted at the base of the calyx-tube; filaments free, linear; anthers free or slightly cohering, sub-3-lobed; one anther 1-theous, the others 2-theous; thecae much bent; connective flat and broad, not produced at the apex. *Pistil* 0 or represented by a small gland. *Female flower*:—*Calyx* and *corolla* as in the male. *Staminodes* 3, tongue-shaped or represented by setae. *Ovary* ovoid, with 3 placentas and many ovules, smooth or strongly tubercled; style short, columnar, not surrounded by a disc at the base; stigmas 3, thick, kidney-shaped, subbilobed. *Fruit* globose or ellipsoid, fleshy or dry, indehiscent, many-seeded; pericarp smooth or tubercled. *Seed* obovate in outline, somewhat compressed; testa woody; tegmen membranous; cotyledons oblong or obovate; radicle conical, subacute.

Annual or perennial herbs, with a musky or foetid odour; leaves rotund or triangular-ovate, cordate, deeply 3–5-lobed, with the lobes lobulate or cut; tendrils 2–3-fid, rarely undivided or straight and spinescent or none; male and female flowers solitary, rarely fasciated.

Species 5, natives of Africa, Asia, and the Mediterranean region; 3 species in South Africa, recorded from South West Africa, the Kalahari, several north-western districts of the Cape Province, the Transvaal, Basutoland, the Orange Free State and from the Albany and Somerset East districts. (Type: *C. vulgaris* Schrad.)

8599 14. CUCUMIS Linn., Sp. Pl., ed. 1, p. 1011 (1753)

Plants monoecious, rarely dioecious. *Male flower*:—*Calyx-tube* campanulate or turbinate, sometimes hairy; lobes 5, subulate or long-linear, sometimes 3-lobed, sometimes setose. *Corolla* 5-partite; lobes oblong, ovate, or obovate-oblong, sometimes sparsely setose without. *Stamens* 3; filaments free, broadly linear, short; anthers free or cohering with one anther 1-theous and the others 2-theous; thecae bent, rarely straight; connective produced at the apex into an appendage. *Rudimentary pistil* present and evident. *Female flower*:—*Calyx* and *corolla* as in the male. *Staminodes* often present, 3. *Ovary* globose, ovoid, or subcylindric, often tubercled or variously hairy, with 3–5 placentas and many ovules; styles very short, surrounded at the base by a cup-like structure; stigmas 3–5, rarely 6 or flattened and 2-lobed, subglobose or obovate. *Fruit* various, fleshy or dry, often indehiscent, many-seeded; pericarp smooth or tubercled, glabrous or hairy. *Seed* suborbicular or ovate-oblong or obovate in outline; cotyledons conforming to the shape of the seed; radicle conical, obtuse or subacute, sometimes not very evident.

Annual or perennial herbs, hispid or scabrid; stems often from a woody rootstock; leaves toothed or palmately 3—7-lobed, rarely dissected, sometimes ovate and cordate at the base; tendrils simple, rarely absent; male flowers fascicled, rarely solitary; female flowers solitary, rarely fascicled.

Described species 52, mostly African; a few found in America and Australia; 18 species in South Africa with a wide distribution. (Type: *C. sativa* Linn.)

8608

15. TROCHOMERIA Hook. fil., in Benth. et Hook. fil., Gen. Pl., vol. 1, p. 822 (1867)

Plants dioecious, rarely monoecious. *Male flower*:—*Calyx-tube* tubular, funnel-shaped, or cylindric, very often elongated, sometimes glandular-pilose in the mouth, sometimes pilose within; lobes 5, very small, ovate, subulate, or linear. *Corolla* 5-lobed; lobes ovate, linear-oblong, long-linear, linear-lanceolate or subulate, sometimes acuminate, sometimes glandular without. *Stamens* 3, inserted at the middle, or near the base of the calyx-tube; filaments free, terete, about as long as or longer than the anthers, sometimes hairy at the base; anthers slightly cohering, with one being 1-theous and the others 2-theous, often sparsely glandular. *Rudimentary pistil* evident. *Female flower*:—*Calyx* and *corolla* as in the male. *Staminodes* 3, setiform or long-linear. *Ovary* ovoid, or elliptic or oblong in outline, with 3 placentas and many ovules; style long-linear; stigma 3-lobed and dilated or of 2 large flat lobes, each bilobed so that the stigma appears to be 4-lobed. *Fruit* ovoid, subglobose or oblong in outline, fleshy, few-seeded. *Seed* ellipsoid, sometimes compressed, smooth; testa crustaceous; tegmen membranous; cotyledons elliptic, flattened or thick and fleshy; radicle evident or small, conical, and blunt.

Scandent; prostrate, or erect herbs, from a thick root; leaves entire, lobed, or partite, sometimes palmately lobed, often with a stipular (?) ciliate or fimbriate bract at the base of the petiole; tendrils simple or none; male flowers solitary, fascicled or in racemes; female flowers solitary.

An African genus of 26 species; 11 species in South Africa, with a fairly general distribution. (Type: *T. hookeri* Harv.)

NOTE.—*Lagenaria sagittata* Harv. of the *Flora Capensis*, vol. 2, p. 489, is a species of *Trochomeria*.—E. P. P.

8612

16. PEPONIUM Engl., in Engl. & Prantl Pflanzenfam., Nachtr., p. 318 (1897)

Plants monoecious or dioecious. *Male flower*:—*Calyx-tube* long-tubular, gradually widening upwards, or subcylindric; globose or attenuated at the base, sometimes pilose without and pilose within, with vibratile hairs; lobes linear, subulate, rarely sublancoolate. *Corolla* 5-lobed; lobes obovate or oblong-elliptic, entire, sometimes glandular-hairy within and without. *Stamens* 3, fixed near the base of the calyx-tube; filaments free, somewhat shorter than the anthers; anthers cohering, with one anther 1-theous and the others 2-theous, sometimes sagittate at the base; thecae bent; connective not produced at the apex. *Rudimentary pistil* not evident or gland-like. *Female flower*:—*Calyx* and *corolla* as in the male. *Staminodes* 0 or 3 and long-linear. *Ovary* oblong or linear-oblong in outline, with 3 placentas and many ovules, sometimes tomentose; style thick, fleshy, linear; stigma 3-lobed, fleshy. *Fruit* ovoid or cylindric, fleshy, many-seeded. *Seed* obovate in outline, smooth or sometimes tomentose; testa crustaceous; tegmen membranous; cotyledons obovate, flattened; radicle conical, subacute.

Prostrate or scandent herbs, often villous; leaves lobed, rarely entire, toothed; tendrils unequally bifid, rarely simple; male flowers solitary or in racemes; female flowers solitary.

An African genus of 21 species, one of which occurs also in Madagascar; 2 species in South Africa, recorded from the Transvaal, Natal, the Orange Free State, Pondoland, and the Queenstown district. (Type: *P. vogelii* (Hook. fil.) Engl.)

NOTE.—Cogniaux and Harms in *Das Pflanzenreich*, vol. 4, 275.2, p. 212, describe the female flower as without staminodes but, in a female flower of *P. caledonicum* dissected, there were 3 well-developed staminodes. The plant described in the *Flora Capensis*, vol. 2, p. 490, as *Luffa caledonica* is a species of *Peponium*.—E. P. P.

8628

17. COCCINIA Wight & Arn., Prodr. Fl. Pen. Ind. Or., vol. 1, p. 347 (1834)

(*Cephalandra* Schrad.)

Plants dioecious. *Male flowers*.—*Calyx* short, turbinate or campanulate, glabrous; lobes 5, linear. *Corolla-tube* campanulate, sometimes glandular within; lobes 5, broadly elliptic or ovate, sometimes bluntly apiculate at the apex, membranous, veined, sometimes glandular within and without. *Stamens* 3; filaments partly free or connate to form a broad flattened structure; anthers sometimes cohering to form a flattened disc, with one anther 1-theous and the others 2-theous; thecae bent; connective not produced. *Rudimentary pistil* 0. *Female flower*.—*Calyx* and *corolla* as in the male. *Staminodes* 3. *Ovary* ovoid, narrowly ellipsoid or flattened and linear or oblong in outline, with 3 placentas and many ovules; style columnar; stigmas of 3 fleshy or flattened glandular lobes. *Fruit* a many-seeded berry, cylindric or ellipsoid. *Seed* compressed or more or less obovate, often tomentose; testa crustaceous; cotyledons obovate, elliptic, thick or flattened; radicle conical, obtuse.

Prostrate or climbing glabrous or scabrid herbs, with the stems (always?) from an underground tuber; leaves digitately 3—5-lobed, with the lobes often toothed, usually cordate at the base; tendrils simple; male flowers in racemes; female flowers solitary.

Species about 40, natives of Africa and Asia; 10—12 species in South Africa, recorded from the Griqualand West district, the Transvaal, Natal, Basutoland and coastwise to the East London district. (Type: *C. indica* Wight & Arn.)

178. CAMPANULACEAE

Flowers bisexual, rarely unisexual by abortion, regular or irregular. *Calyx* 5- (rarely 3—4- or 6—10-) lobed or partite; lobes equal or unequal, valvate or imbricate. *Corolla* gamopetalous, rarely divided almost to the base, sometimes bilabiate, 4—5-lobed; tube campanulate, cylindric, tubular, rarely funnel-shaped, sometimes split down 1 side; lobes various, valvate or induplicate. *Stamens* as many as the corolla-lobes and alternating with them, free from the corolla or inserted on the corolla-tube; filaments free or connate into a tube, often dilated at the base; anthers free or connate, glabrous or all or some hairy or bearded at the apex, or with apical bristles. *Ovary* inferior, semi-superior, or rarely superior, 2—5- (rarely 1- or 6—10-) chambered, with several to many, rarely 2, ovules in each chamber; style simple, often hidden by the connate stamens; stigmas as many as the number of chambers in the ovary. *Fruit* a capsule or berry, often crowned with the persistent calyx, variously dehiscent, rarely indehiscent. *Seeds* often small, smooth, or reticulate-rugose; embryo straight; endosperm fleshy.

Herbs, shrubs, or undershrubs, very rarely trees; leaves alternate, rarely opposite or whorled, entire, toothed, more rarely lobed or cut, rarely undeveloped; stipules 0; inflorescence a raceme or lax panicle or flowers axillary and solitary; bracts present or absent.

Genera about 70; species over 1,500, widely dispersed throughout the world.

NOTE.—When reference is made to the calyx-tube, the free portion above the ovary is described.—E. P. P.

- | | |
|--|----|
| 1. Stamens attached to the middle of the corolla-tube or higher up ... | 2 |
| Stamens free from the corolla or attached at the very base of the corolla ... | 4 |
| 2. An undershrub with wiry branches and appearing almost leafless | |
| 6. <i>Siphocodon</i> Turcz. | |
| Shrubs or herbs with well-developed leaves ... | 3 |
| 3. Ovary 2-chambered ... | |
| 12. <i>Sphenoclea</i> Gaertn. | |
| Ovary 3-chambered ... | |
| 4. <i>Rhigiophyllum</i> Hochst. | |
| 4. Style swollen at the base into a large subglobose solid ball | |
| 5. <i>Treichelia</i> Vatke | |
| Style not swollen into a ball at the base ... | 5 |
| 5. Corolla slit down one side ... | 6 |
| Corolla not slit down one side ... | 8 |
| 6. Ovary long-cylindric ... | |
| 15. <i>Grammatotheca</i> C. Presl | |
| Ovary variously shaped but not long-cylindric ... | 7 |
| 7. Some or all of the anthers bearded at the apex | |
| 14. <i>Lobelia</i> Linn. | |
| Anthers usually hairy on the back but not bearded at the apex | |
| 13. <i>Cyphia</i> Berg. | |
| 8. Ovary cylindric ... | |
| 3. <i>Prismatocarpus</i> L'Hérit. | |
| Ovary variously shaped but not cylindric ... | 9 |
| 9. Ovary 1-chambered or imperfectly 2-chambered, with 4 erect ovules in each chamber ... | |
| 1. <i>Merciera</i> A. DC. | |
| Ovary 2—5-chambered with several to many ovules in each chamber | 10 |
| 10. Corolla split almost to the base or petals almost free ... | 11 |
| Corolla with a distinct tube ... | 12 |
| 11. Calyx and corolla papillose ... | |
| 8. <i>Cephalostigma</i> A. DC. | |
| Calyx and corolla not papillose ... | |
| 9. <i>Lightfootia</i> L'Hérit. | |
| 12. Small herbs found in damp or wet places | |
| 16. <i>Laurentia</i> Michx. | |
| Undershrubs or herbs not confined to wet places ... | 13 |
| 13. Fruit dehiscing by a large hole at the apex, not splitting into valves | |
| 2. <i>Roella</i> Linn. | |
| Fruit splitting into as many valves as there are loculi ... | 14 |
| 14. Ovary 3-chambered, very rarely 4-chambered | |
| 11. <i>Theilera</i> Phill. | |
| Ovary 2-chambered or 5-chambered ... | 15 |
| 15. Flowers solitary on usually long axillary and terminal peduncles which are sometimes fascicled ... | |
| 7. <i>Wahlenbergia</i> Schrad. | |
| Inflorescence a lax corymb or a head-like glomerule at the apex of the branches ... | |
| 10. <i>Microcodon</i> A. DC. | |

8661 1. *MERCIERA* A. DC., Monogr. Campanul., p. 369, t. 5 (1830)

Flowers bisexual. *Calyx* much shorter than the corolla, glabrous; tube almost 0 or shallowly cup-shaped; lobes 4—5, lanceolate or oblong-lanceolate, longer than the tube. *Corolla* 4—5-lobed, glabrous; tube tubular, gradually widening upwards; lobes sometimes unequal, lanceolate, shorter than the tube, sometimes glandular on the inner face. *Stamens* 4—5, free

from the corolla, included; filaments filiform, pilose about the middle; anthers 2-thecous, linear. *Ovary* inferior, turbinate or subglobose, 1-chambered or imperfectly 2-chambered, with 4 erect ovules in each chamber, pilose; style filamentous, exerted, swollen at the base; stigma ellipsoid or club-shaped, of 2 fleshy glandular or hairy lobes. *Fruit* a capsule, 1-seeded by abortion, crowned with the persistent calyx.

Small undershrubs, glabrous or hairy; leaves ericoid, linear, rigid, crowded, often fascicled, ciliated; flowers solitary, axillary, shortly peduncled or sessile; bracts 2.

Endemic; species 4, confined to the south-western districts of the Cape Province. (Type: *M. leptoloba* A. DC.)

8662

2. ROELLA Linn., Sp. Pl., ed. 1, p. 170 (1753)

Calyx longer than the corolla-tube, 5-lobed, very rarely an occasional flower 4-lobed, somewhat leathery, usually glabrous; tube shallowly saucer-shaped; lobes lanceolate-linear, ovate-lanceolate, lanceolate or ovate, entire or pectinate or ciliate in the upper half, sometimes apiculate, rarely with a short spine on the inner face below the apex. *Corolla* 5-lobed, very rarely an occasional flower 4-lobed; tube normally campanulate, more rarely broadly tubular; lobes elliptic or oblong. *Stamens* normally 5, very rarely an occasional flower with 4 stamens, free from the corolla-tube, included or subexserted; filaments expanded at the base into an oblong or linear ciliated scale-like structure; anthers 2-thecous, free, linear or oblong-linear. *Disc* annular or tumid. *Ovary* 2-chambered, with many ovules in each chamber; style broadly linear or terete, sometimes hairy at the base, or glandular above, sometimes with 2 glands at the base of the stigma, included; stigma of 2 recurved somewhat fleshy lobes, often club-shaped or of 2 oblong glandular lobes, or glabrous. *Fruit* a capsule, 2-locular, perforated by the permanent base of the style and therefore appearing as if covered by a concave operculum, at length dehiscing by a large hole at the apex, without valves. *Seeds* numerous, angled, scabrous, thick.

Undershrubs, rarely herbs; leaves alternate, scattered, small or narrow, often rigidly recurved and fascicled, entire or ciliate toothed, sometimes those under the flower pinnately spinous-lobed; flowers sessile, solitary or glomerate at the ends of the branches.

Endemic; species 20, mostly confined to the south-western districts of the Cape Province; a few species extend through the coastal area to Natal; also recorded from the Prince Albert district. (Type: *R. ciliata* Linn.)

8663

3. PRISMATOCARPUS L'Hérit., Sert. Angl., p. 1, t. 3 (1788)

Calyx much shorter, shorter, or longer than the corolla-tube, 5-lobed, sometimes to the base, glabrous or hairy; tube, when present, campanulate or shallowly saucer-shaped; lobes lanceolate, lanceolate-linear, linear, oblong, or ovate, sometimes acuminate, rarely with membranous margins. *Corolla* 5-lobed, glabrous; tube campanulate or tubular or tubular below and campanulate above; lobes lanceolate-elliptic, elliptic, or obovate-oblong. *Stamens* 5, free from the corolla, included or shortly exerted; filaments long-linear and pilose or short and dilated at the base; anthers 2-thecous, linear. *Disc* glandular, tumid, or 0. *Ovary* cylindric, 2-chambered, with many ovules in each chamber, usually hairy; style linear or thick and terete, sometimes with 2 glands below the stigma, included or exerted, sometimes hairy; stigma ellipsoid and 2-lobed, or of 2 flattened lobes, or of 2 recurved lobes, more rarely cylindric. *Fruit* a capsule, prismatic or cylindric, elongated, 2-locular, splitting from the top to the base into 5 segments; seeds oblong in outline, compressed, dotted.

Subshrubs, more rarely perennial herbs; leaves alternate, small, often narrow, often fascicled in the lower part of the stem; flowers solitary or glomerate at the ends of the branches or arranged in dichotomous panicles.

An African genus of 21 described species, one of which is described from tropical Africa, the remainder mostly confined to the south-western districts of the Cape Province, but extend to the Albany district; 1 species recorded from the Prince Albert district.

8664 4. RHIGIOPHYLLUM Hochst., in *Flora*, vol. 25, p. 232 (1842)

Calyx much shorter than the corolla-tube, glabrous; tube shallowly basin-shaped; lobes lanceolate. *Corolla* 5-lobed, glabrous; tube long-cylindric; lobes broadly lanceolate. *Stamens* 5, fixed in the throat of the corolla-tube, scarcely exserted; filaments linear, shorter than the anthers; anthers 2-theous, linear. *Ovary* obconic, 3-chambered, with several ovules in each chamber on apical placentas; style slender, terete, exserted, glabrous; stigma of 3 recurved fleshy lobes. *Fruit* a capsule, operculate, crowned with the persistent style-base.

A rigid shrub; leaves imbricate in 4 rows, squarrose, entire; flowers in a terminal head, intermixed with rigid leaflike bracts; bracteoles 2.

Endemic; species 1, recorded from the Caledon, Ceres, and Bredasdorp districts. (Type: *R. squarrosus* Hochst.)

8665 5. TREICHELIA Vatke, in *Linnaea*, vol. 38, p. 700 (1874)

(*Leptocodon* Sond. non Lem.)

Calyx shorter than the corolla-tube, 5-lobed, hairy; tube subcampanulate; lobes ovate, acuminate, apiculate. *Corolla* 5-lobed, glabrous; tube cylindric, globose at the base; lobes lanceolate. *Stamens* 5, free from the corolla-tube, included; filaments short, linear, expanded and ciliate at the base; anthers 2-theous, linear. *Ovary* subglobose, 2-chambered, with several ovules in each chamber, hairy; style slender, terete, swollen into a large subglobose solid ball at the base; stigma 2-lobed. *Fruit* a capsule, cylindric, several-seeded, covered by the solid conical base of the style.

A dwarf annual hairy herb; leaves linear, with a few remote teeth and a few rigid cilia at the base; flowers in dense terminal subheads, intermixed with long-linear bracts.

Endemic; species 1, recorded from the Cape Peninsula. (Type: *T. longibracteata* (Sond.) Vatke.)

NOTE.—This is the plant described in vol. 3, p. 584, of the *Flora Capensis* as *Leptocodon longebracteatum* Sond.—E. P. P.

8667 6. SIPHOCODON Turcz., in *Bull. Soc. Nat. Moscou*, vol. 25, p. 175 (1852)

Calyx shorter than the corolla-tube, 5-lobed, glabrous; tube shallowly saucer-shaped; lobes lanceolate. *Corolla* 5-lobed, glabrous; tube tubular; lobes oblong or ovate-lanceolate, shorter than the tube. *Stamens* 5, fixed high up in the corolla-tube, included; filaments free, slightly shorter than the anthers; anthers 2-theous, oblong. *Ovary* inferior, 2—3-chambered, with 2, 4, or 5 ovules in each chamber; style terete, gradually widening downwards; stigma of 3 lanceolate glandular lobes. *Fruit* a capsule, crowned with the persistent calyx, opening transversely and the lid falling off with the portion of the calyx.

An undershrub with wiry branches appearing almost leafless and resembling in habit a species of *Thesium*; leaves small, sparsely arranged, subulate; flowers in shortly peduncled racemes and the racemes often panicked.

Endemic; species 2—3, recorded from the Caledon and Bredasdorp districts. (Type: *S. spartioides* Turcz.)

8668 **7. WAHLENBERGIA** Schrad., Catal. Pl. Horti Goetting (1814)

Calyx shorter than the corolla-tube, rarely about as long, 5-partite, very rarely with only 3 or 4 lobes, usually hairy at the base; tube almost 0; lobes linear or subulate, acute, very rarely thick and fleshy and ovate in side view. *Corolla* 5-lobed to about the middle or sometimes deeper, rarely 3—4-lobed, glabrous; tube funnel-shaped, tubular or campanulate, sometimes widened at the base; lobes oblong, linear, ovate-oblong, broadly elliptic, or obovate, usually shorter than the tube. *Stamens* 5, free from the corolla, included; filaments linear, sometimes pilose, often expanded at the base and with the expanded portion 2-lobed; anthers 2-theccous, linear, sometimes sagittate at the base. *Ovary* subglobose, 2—5-chambered, with many ovules in each chamber, glabrous or hairy, sometimes glandular; style terete, included or exserted, sometimes expanded into a cone at the base, glabrous or sometimes hairy below, sometimes glandular above; stigma of 2—5 glandular, usually recurved lobes. *Fruit* a capsule, dehiscent loculicidally into as many valves as there are loculi.

Annual or perennial herbs of various habit, sometimes woody at the base; leaves alternate, rarely opposite, usually more numerous in the lower part of the plant; flowers solitary, on usually long axillary or terminal peduncles which are sometimes paniced.

Described species between 200 and 250, natives of Africa, western Europe, Madagascar, tropical and eastern Asia, Australia, New Zealand, and South America; 143 species described from South Africa, recorded from South West Africa and from the Clanwilliam district, through the coastal belt to Natal; also found in Basutoland and the Transvaal, poorly represented in the central districts. (Type: *W. elongata* (Willd.) Schrad.)

8669 **8. CEPHALOSTIGMA** A. DC., Monogr. Campanul., p. 117 (1830)

Calyx 5-partite at the base; segments ovate, papillose on the back, cellular and translucent on the margins. *Corolla* of 5 almost free petals; petals broadly linear, widening towards the base, papillose. *Stamens* 5, free from the corolla; filaments linear, membranous, broadened cruciform and pilose at the base; anthers (not seen) free. *Ovary* inferior, campanulate, 2—3-chambered, with several ovules in each chamber, papillose; style terete, expanded at the base into a conical structure, pilose; stigma thickened, 2-lobed. *Fruit* a capsule, crowned with the persistent calyx.

Diffuse or erect herbs, pilose or glandular; leaves alternate, sessile, linear, oblong or lanceolate, entire, sometimes setose; inflorescence a short 3-flowered axillary raceme or a few-flowered cyme.

Species about 15, mostly natives of Africa; one recorded from India and Australia; 1 or 2 species in South West Africa. (Type: *C. paniculatum* A. DC.)

8670 **9. LIGHTFOOTIA** L'Hérit., Sert. Angl., p. 3, t. 4 (1788)

Calyx longer than the corolla-tube, 5-lobed, glabrous; tube almost 0; lobes linear-lanceolate, lanceolate or linear, often with narrow membranous margins. *Corolla* deeply 5-lobed or divided almost to the base, glabrous, rarely pubescent within; tube shallowly basin-shaped, more rarely campanulate or almost 0; lobes linear, oblong-linear, lanceolate-elliptic, lanceolate, linear-oblong, or oblong, longer than the tube, sometimes revolute. *Stamens* 5, free from the corolla; filaments linear, expanded and ciliate at the base, about as long as or shorter than the anthers; anthers 2-theccous, linear.

Disc sometimes present, annular. *Ovary* inferior, half-inferior, or nearly superior, 2—5-chambered, with few ovules in each chamber; style linear or terete, often broadened above, generally pilose below and glandular on the broadened portion; stigma club-shaped or flattened, 2—5-lobed, often glandular. *Fruit* a capsule, dehiscent loculicidally into as many valves as there are loculi.

Small shrubs, more rarely herbaceous perennials; leaves alternate, rarely opposite, often fascicled, small, often narrow, often squarrose, entire or rigidly toothed; flowers axillary and terminal, solitary, shortly pedicelled or sessile, sometimes subfascicled or arranged in lax corymbs.

An African genus of 63 species, with 1 species described from Madagascar; 29 species in South Africa, generally distributed but more common in the south-western districts of the Cape Province and in the south-eastern coastal belt. (Type: *L. oxycoccoides* L'Hérit.)

8677 10. MICROCODON A. DC., Monogr. Campanul., p. 127, t. 19 (1830)

Calyx as long as or shorter than the corolla-tube, 5-partite; tube almost 0; lobes subulate, linear, sometimes ciliate. *Corolla* 5-lobed, glabrous; tube tubular; lobes ovate or oblong, shorter than the tube. *Stamens* 5, fixed at the very base of the corolla-tube, included; filaments linear, shorter than the anthers, pilose; anthers linear. *Ovary* inferior or semi-superior, 5-chambered, with many ovules, glabrous or hairy; style terete, included, scantily hairy on the lower portion; stigma 5-lobed. *Fruit* a capsule, loculicidally 5-valved.

Small annual herbs; leaves alternate or subopposite, linear; inflorescence a lax corymb or a head-like glomerule at the apex of the branches.

Endemic; species 4, mostly confined to the south-western districts of the Cape Province; one recorded from the Calvinia district and another from the Malmesbury district. (Type: *M. glomeratum* A. DC.)

8677a 11. THEILERA Phillips, in Bothalia, vol. 2, p. 369 (1932)

Calyx much shorter than the corolla-tube, 5-partite to the base, glabrous; tube 0; lobes linear. *Corolla* 5-lobed, glabrous; tube cylindric; lobes oblong or ovate-oblong, shorter than the tube. *Stamens* 5, free from the corolla, included; filaments thread-like, longer than the anthers, scantily pilose; anthers 2-theous, linear. *Ovary* inferior, 3-chambered, very rarely 4-chambered, with many ovules in each chamber on basal placentas; style terete, exerted, glabrous; stigma club-shaped, divided into 3 glandular lobes. *Fruit* not seen.

Small lax shrubs, with long slender branches, occasionally branched; leaves alternate, fascicled, linear, erect or recurved; flowers sessile, solitary, axillary.

Endemic; species 2, recorded from the Knysna and Mossel Bay districts. (Type: *T. guthriei* (L. Bolus) Phill.)

8680 12. SPHENOCLEA Gaertn., Fruct., vol. 1, p. 113, t. 24, fig. 5 (1788)

Calyx as long as the corolla, 5-partite, glabrous; tube 0; lobes broadly elliptic. *Corolla* 5-lobed, glabrous; tube short, broader than long; lobes ovate-oblong, about as long as the tube. *Stamens* 5, attached to the middle of the corolla-tube, included; filaments much shorter than the anthers; anthers 2-theous, almost quadrate in outline. *Ovary* half-inferior, 2-chambered, with numerous ovules from apical placentas in each chamber; stigma subsessile, subcapitate, very shortly bifid. *Fruit* a depressed capsule,

globose, dehiscent transversely and with the operculum falling with the calyx-lobes. *Seed* ellipsoid, sculptured.

An erect glabrous annual, with a somewhat fleshy simple or branched stem; leaves alternate, simple, shortly petioled or subsessile, lanceolate, broadly elliptic, or oblanceolate; inflorescence a dense bracteate spike; flowers compressed vertically.

A genus of 2 species, natives of Africa, tropical Asia and America; 1 species recorded from South West Africa. (Type: *S. zeylanica* Gaertn.)

8681

13. CYPHIA Berg., Descr. Pl. Cap., p. 172 (1767)

Calyx from much shorter to about half as long as the corolla, 5-partite, glabrous; tube 0; segments lanceolate, lanceolate-linear, or ovate, sometimes with 2 teeth, or ciliate, or pinnatifid, or entire. *Corolla* usually bilabiate, unequally 5-lobed, sometimes hairy without and within; normally 3 petals cohering and 2 petals free, rarely all the petals free; free petals lanceolate, long-linear, or elliptic, sometimes clawed; lobes of cohering petals linear, lanceolate-linear, ovate-elliptic, sometimes clawed. *Stamens* 5, free from the petals; filaments free, linear, sometimes widened at the base, usually pilose, more rarely almost glabrous, sometimes connate into a hairy tube; anthers oblong, lanceolate, usually hairy on the back, rarely glabrous. *Ovary* half-inferior, 2-chambered, with few to many ovules in each chamber from apical placentas; style terete, sometimes stout, free or enclosed in the staminal-tube when present; stigma somewhat club-shaped, suboblique, sometimes subsessile, sometimes glandular, rarely pilose and with a lateral orifice. *Fruit* an ellipsoid or globose capsule, ribbed and sometimes tubercled between the ribs. *Seed* discoid or 3-angled, with a broad membranous wing when discoid; testa reticulate; embryo lateral; cotyledon bifurcate, oblong; radicle terete, about as long as the cotyledons.

Herbaceous perennials, often with tubers, stem erect or twining; leaves cauline or more rarely wholly radical, alternate, entire or divided, varying from broadly ovate to narrow-linear, with the margins serrate, toothed, crenate, or entire; inflorescence lax, rarely very dense, either a distinct raceme at the end of the stem or the flowers arranged in a racemose manner in the axils of the upper leaves, rarely the inflorescence in a 2—4-flowered umbel in the axils of the leaves; bracts various from subulate to lanceolate, entire or divided, sometimes toothed, rarely pectinate; bracteoles 2, variously situated on the pedicels.

Genus with 51 described species, mostly African; 1 species recorded from East India and another from the Cape Verde Islands; 37 species recorded from South Africa, extending from South West Africa, through the coastal belt to the mountains of the eastern Transvaal, rare in the central districts. (Type: *C. bulbosa* (Linn.) Berg.)

8694

14. LOBELIA Linn., Sp. Pl., ed. 1, p. 929 (1753)

(*Dobrowskya* Presl; *Isolobus* A. DC.; *Mezleria* Presl; *Monopsis* Salisb.; *Parastranthus* G. Don)

Calyx much shorter than the corolla, 5-partite, very rarely oblique, usually hairy; tube shallowly saucer-shaped or 0; lobes lanceolate or linear-lanceolate, linear, or linear from an ovate base, often ciliate, sometimes scabrid. *Corolla* cleft down 1 side to the base, 5-lobed, regular, 2-lipped, or rarely 1-lipped, rarely with a palate on one lip, glabrous or hairy; tube somewhat cylindric or funnel-shaped, very rarely with a pouch at the base; upper lip 3-lobed or of 2 distinct clawed petals, sometimes smaller than the lower lip; lower lip 3- or 2-fid. *Stamens* 5, attached to the very base of the corolla, rarely higher up; filaments usually connate, hairy or glabrous; anthers connate, some or all bearded. *Ovary* inferior, $\frac{1}{2}$ -superior, or almost wholly superior, 2-chambered, with 1 to many ovules in each chamber on

axile placentas; style linear, rarely with a hairy collar below the stigma; stigma subglobose, 2-lobed, hairy. *Fruit* a capsule, 2-locular, 2-valved, often crowned with the persistent calyx.

Annual or perennial herbs or subshrubs; stems sometimes wiry or appearing leafless; leaves alternate, opposite, or whorled, entire or variously toothed, sometimes radical, sometimes undeveloped or small and subulate; inflorescence a leafy spike or raceme or the flowers subsessile or pedicelled, axillary and solitary and clustered at the end of the branches.

Described species over 560, natives of most warm countries; 72 species described from South Africa and ranging from South West Africa, Bechuanaland, the Transvaal, Basutoland, Natal, and through the coastal belt to the Clanwilliam district and Namaqualand; poorly represented in the central districts. (Type: *L. cardinalis* Linn.)

8696 15. GRAMMATOTHECA C. Presl, Prodr. Monogr. Lobeliae, p. 43 (1836)

Calyx much shorter than the corolla, 5-partite, glabrous; tube 0; segments linear, spreading or reflexed. *Corolla* bilabiate, 5-lobed, glabrous; tube tubular, split down 1 side almost to the base; upper lip of 2 linear acuminate lobes; lower lip of 3 oblong lobes. *Stamens* 5, attached to the base of the corolla; filaments connate to form a staminal-tube, glabrous; anthers cohering, all bearded. *Ovary* long-cylindric, 2-chambered, with many ovules on axile placentas; style linear, glabrous; stigma subglobose, faintly 2-lobed, glandular-hairy. *Fruit* not seen.

A glabrous herb found in wet and boggy places; leaves sessile, linear, linear-lanceolate, or lanceolate; flowers solitary, sessile, axillary.

Species 1, recorded from Australia and South Africa; in South Africa recorded from the Cape, the Uitenhage district to Natal. (Type: *G. bergiana* (Cham.) Presl)

NOTE.—Bentham and Mueller (*Flora Australiensis*, vol. 4, p. 128 (1869)) have considered this plant to be a species of *Lobelia* and have described it under the name of *L. bergiana* Cham. The description of the capsule as given by Sonder (*Flora Capensis*, vol. 3, p. 532 (1864—65)) has been copied from previous authors and, according to Bentham and Mueller, is not correct. The plant is described in the *Flora Capensis* under the name *Grammatothea erinoides* Sond.—E. P. P.

8699 16. LAURENTIA Michx., ex Adans. Fam., vol. 2, p. 134 (1763)
(*Enchysia* Presl)

Calyx shorter than the corolla, 5-partite to the base, glabrous or hairy; tube 0; lobes oblong, lanceolate, or linear-lanceolate. *Corolla* 5-lobed or bilabiate, glabrous; tube funnel-shaped or tubular, not split down 1 side; upper lip of 2 linear lobes; lower lip of 3 oblong lobes; when 5-lobed then all lobes oblong-linear and sometimes unequal. *Stamens* 5, attached to the base of the corolla-tube; filaments connate, glabrous; anthers connate, not bearded or 1 or more with 1 or 2 setae at the apex, rarely hairy on the back. *Ovary* more or less ovoid, obconic, or ellipsoid, inferior or partly superior, 2-chambered, with many ovules on axile placentas, glabrous or hairy; style linear; stigma subglobose, 2-lobed, glandular-hairy. *Fruit* a capsule, crowned with the persistent calyx. *Seed* subglobose; testa somewhat crustaceous; embryo minute.

Small herbs, sometimes creeping, usually found in damp places, glabrous or villous; leaves sometimes radical, sessile or petioled, varying from orbicular to linear, entire or shallowly lobed; flowers pedicelled, axillary and solitary, more rarely in racemes.

Described species 29, natives of Africa, the Mediterranean region, the Canary Islands, and North and South America; 11 species in South Africa extending from

the Van Rhynsdorp to the George districts; also recorded from South West Africa, the northern Transvaal, and Basutoland.

179. GOODENIACEAE

Flowers bisexual, irregular, or rarely regular. *Calyx-tube* adnate to the ovary or rarely free; limb of 5 persistent lobes, sometimes very small, or united into a ring, or quite obsolete. *Corolla* 5-lobed; tube sometimes split down 1 side, often villous within and with several processes below the sinuses of the corolla-lobes; lobes sometimes digitately spread, with glabrous wings as the flower opens. *Stamens* 5, alternating with the corolla-lobes, free or inserted at the junction of the corolla-tube with the ovary or very rarely shortly adnate to the corolla-tube; anthers 2-theccous, with the thecae parallel and opening longitudinally, sometimes with an apical projection, free or united in a ring round the style. *Disc* sometimes present. *Ovary* wholly or partly inferior, rarely free within the corolla-tube, 1—2-chambered, with 1, 2, or more erect or ascending ovules in each chamber; style simple, very rarely deeply divided; stigma truncate or 2-lobed, surrounded and enclosed in a cup-shaped or 2-lipped structure. *Fruit* a drupe, capsule, or nut, opening by 2—4 valves or rarely bursting irregularly or almost indehiscent. *Seed* with a thin or crustaceous or thick and hard testa; embryo straight in the centre of a somewhat fleshy endosperm.

Herbs, undershrubs, or rarely shrubs; leaves alternate or radical, very rarely irregularly opposite, entire, toothed or rarely pinnatifid; inflorescence a spike, raceme, or panicle, sometimes flowers solitary and axillary; bracts and bracteoles sometimes present.

Genera 13; species about 300, almost all Australian, a few in New Zealand, Antarctic, America, the Pacific Islands, tropical Asia, and Africa.

8716

SCAEVOLA Linn., Mant., vol. 2, p. 145 (1771)

Calyx much shorter than the corolla, cup-shaped or of 5 distinct segments, fleshy, glabrous. *Corolla* flat, 5-lobed, somewhat fleshy; tube split to the base, usually densely villous within and with several processes below the sinuses of the lobes; lobes digitately spreading, sometimes lanceolate with broad undulating membranous margins. *Stamens* 5, free from the corolla; filaments long-linear, glabrous; anthers 2-theccous, oblong, with an apical projection. *Disc* sometimes unilateral and globose. *Ovary* wholly inferior and rarely the summit free, more or less obconic, 2-chambered with a single erect ovule in each chamber or 1-chambered with 1—2 erect ovules; ovary wall thick and fleshy, with ducts; style simple, thick, semi-terete; stigma truncate or of 2 fleshy lobes, enclosed and surrounded by a villous ciliate cup. *Fruit* indehiscent, with a more or less succulent or thin and membranous exocarp, and a hard, woody or bony, rarely thin and crustaceous, endocarp. *Seed* discoid; testa parchment-like; embryo straight, usually terete, more rarely flat; cotyledons sometimes obovate, flat, somewhat fleshy, rarely broader than the radicle; radicle semi-terete, differentiated from the cotyledons; endosperm fleshy.

Herbs, undershrubs, or shrubs; leaves alternate, often obovate, narrowing to the base and half-clasping the stem; inflorescence axillary and pedunculate, dichotomously branched, with the flowers in the axils of the bracts.

Species about 130, mostly natives of Australia, a few found in Asia, the Pacific Islands, India, and Africa; 1 species in South Africa found on the sea-shore from the Riversdale district to Natal and Zululand. (Type: *S. lobelia* Murr. = *S. plumieri* (L.) Vahl)

180. COMPOSITAE

Plants sometimes monoecious or dioecious. *Flowers* (florets) 1 to many, arranged in a head, surrounded by an involucre of bracts, either all bisexual or some unisexual by abortion. *Heads* either discoid or distinctly radiate, with all the disc-florets fertile or sterile or some fertile and some sterile in the same head; marginal florets in 1 to several rows, either filiform or radiate, usually female, sometimes neuter, very rarely bisexual. *Involucre* variously shaped; bracts in 1 to many rows, free or more or less connate. *Receptacle* usually flat, more rarely globose or cylindric, smooth, honeycombed, often with the margins of the pits more or less produced, rarely densely setose, sometimes with paleae subtending the florets. *Calyx* absent or represented by a pappus. *Corolla* gamopetalous; tube elongated or short or rarely 0; limb with 4—5 (rarely 2—3) lobes or teeth, rarely 1- or 2-lipped; corolla of various florets on the same head sometimes differing, some being filiform or strap-shaped, more rarely all the florets with strap-shaped corollas. *Stamens* as many as the corolla-lobes and alternating with them, inserted on the corolla-lobes; filaments free or connate; anthers connate to form a tube round the style, very rarely free, obtuse, sagittate, or tailed at the base. *Staminodes* sometimes present in the female flowers. *Ovary* inferior, 1-chambered, with a solitary basal erect ovule; style filiform, linear or terete, sometimes thickened and cylindric above, sometimes undivided; style-branches normally 2, filiform or linear, lanceolate or ovate, or truncate, or obtuse at the apex. *Pappus* various, sometimes of bristles in 1 or more rows or of paleae, or of bristles and paleae, or absent, persistent or caducous. *Fruit* a small cypsela, usually crowned with the pappus, very rarely a drupe. *Seed* erect; embryo straight; endosperm 0.

Herbs or shrubs, rarely trees, sometimes acaulescent; leaves opposite, alternate, sometimes all radical, rarely whorled, simple, more rarely compound; stipules none; heads sessile or peduncled, terminal or axillary, solitary or variously grouped.

A large cosmopolitan family of about 900 genera and over 17,000 species.

- | | | |
|---|-----|--------------------------------|
| 1. Florets all tubular or heads with marginal ligulate rays or filiform florets | | |
| or all florets unisexual | ... | 2 |
| Florets all ligulate | ... | 227 |
| 2. Plants monoecious or dioecious; all the florets unisexual | ... | 3 |
| Florets all bisexual or bisexual and unisexual in the same head | ... | 6 |
| 3. Plants monoecious | ... | 4 |
| Plants dioecious | ... | 5 |
| 4. Herbs with pinnately dissected leaves; male heads in leafless spikes or racemes | ... | 95. <i>Ambrosia</i> Linn. |
| Leaves variously lobed but not pinnately dissected; female head enclosed in a 2-beaked spiny involucre | ... | 96. <i>Xanthium</i> Linn. |
| 5. Pappus of scabrid bristles | ... | 31. <i>Brachylaena</i> R. Br. |
| Pappus none | ... | 32. <i>Tarchonanthus</i> Linn. |
| 6. Heads homogamous, discoid, with all the florets bisexual or some sterile | | 7 |
| Heads heterogamous, with distinct ray-florets or filiform or ligulate ray-florets | ... | 75 |
| 7. Receptacle with distinct paleae subtending the florets | ... | 8 |
| Receptacle smooth, honeycombed, fimbriate or setose, but without distinct paleae, sometimes the margins of the pits produced and enveloping the ovary | ... | 17 |

8. Pappus none 9
 Pappus of distinct barbellate or plumose bristles or of 3—4 awns or of paleae or an entire thickened marginal rim, sometimes double of bristles and paleae... .. 10
9. Aromatic plants; heads small, arranged in a dense corymb, very rarely solitary 120. *Athanasia* Linn.
 Herbaceous; heads peduncled, terminal, solitary
 116. *Lasiospermum* Lag.
10. Pappus of 3—4 awns armed with retrorse bristles
 109. *Bidens* Linn.
 Pappus of bristles or paleae or hairs or of bristles and scales 11
11. Pappus of 3—4 short deciduous or caducous bristles or an outer row of small scales... .. 19. *Amellus* Linn.
 Pappus of bristles, paleae, or scales, rarely of jointed hairs, but not of bristles and scales 12
12. Pappus of distinct bristles 13
 Pappus of paleae or scales, rarely of jointed hairs 15
13. Pappus bristles plumose from the base 51. *Helipterum* DC.
 Pappus bristles barbellate or plumose but not from the base 14
14. Involucre-bracts woolly on the back 62. *Lachnospermum* Willd.
 Involucre-bracts not woolly on the back 54. *Helichrysum* Mill.
15. Leaves entire, incised or pinnatisect 15a
 Leaves digitately or pinnately lobed 16
- 15a. Anthers blunt at the base; style-branches truncate at the apex
 120. *Athanasia* Linn.
 Anthers sagittate or tailed at the base; style-branches not truncate at the apex 177. *Platycarpha* Less.
17. Head with 1 bisexual floret enclosed by 2 bracts, the one clasping the other 6. *Corymbium* Linn.
 Heads not as above 18
18. Pappus none or represented by an entire thickened marginal rim 19
 Pappus of bristles in 1 or 2 rows or of paleae or of bristles and paleae, sometimes of linear awns, rarely of 3 spatulate-linear lobes, sometimes caducous 28
19. Heads with single floret 20
 * Heads with few to many florets 21
20. Heads normally in small groups or the groups often arranged in a spicate manner at the end of the branches 57. *Stoebe* Linn.
 Individual heads massed into subglobose heads at the end of the branches 58. *Disparago* Gaertn.
21. Leaves opposite 22
 Leaves alternate 23
22. Heads solitary, sessile, axillary or terminal
 133. *Asaemia* Harv.
 Heads arranged in a corymb at the end of the branches
 134. *Gymnopentzia* Benth.

23. Style-branches lanceolate or linear-spathulate or subulate, not truncate at the apex ... 23a
 Style-branches truncate and usually penicillate at the apex ... 24
- 23a. Style-branches subulate, bristly ... **1. Ethulia L.**
 Style-branches lanceolate or linear-spathulate ... **132. Artemisia L.**
24. Corolla-lobes 4 ... 25
 Corolla-lobes 5 ... 26
25. Leaves fan-shaped and incised or once or twice pinnatisect ...
 Leaves oblong, lanceolate, linear-lanceolate, or linear ...
 ... **130. Schistostephium Less.**
 ... **135. Peyrousea DC.**
26. Outer florets fertile; inner florets sterile ... **137. Stilpnophytum Less.**
 All the florets fertile ... 27
27. Involucre globose ... **136. Pentzia Thunb.**
 Involucre ovoid or campanulate ... **139. Brachymeris DC.**
28. Pappus of paleae or scales; bristles absent, if present, then bristles with membranous wings ... 29
 Pappus of bristles in 1—2 rows, sometimes of bristles and paleae, but bristles always present; rarely pappus of 3 spathulate-linear lobes which are glandular above ... 35
29. Anthers distinctly sagittate or tailed at the base ... 30
 Anthers blunt at the base, rarely shortly eared, but then the leaves dissected ... 31
30. Ovary glabrous, beaked at the base ... **180. Centaurea Linn.**
 Ovary pilose or glandular, not beaked at the base ... **82. Calostephane Benth.**
31. Leaves opposite, verticillate, whorled, fascicled, sometimes the upper leaves alternate ... 32
 Leaves alternate ... 33
32. Heads grouped in a dense corymb, rarely in a lax panicle ... **8. Ageratum Linn.**
 Heads solitary or 2—3 together ... **119. Phaeocephalus Sp. Moore**
33. Pappus of 8 elliptic or obovate paleae, with the alternate paleae awned; style-branches ovate at the apex ... **113. Schkuhria Roth.**
 Pappus of 1 lateral broad membranous paleae or of separate paleae or of a cup or crown ... 34
34. Involucre globose ... **136. Pentzia Thunb.**
 Involucre subcampanulate or spindle-shaped ... **138. Marasmodes DC.**
35. Receptacle densely setose ... 36
 Receptacle smooth, honeycombed, sometimes with the margins of the pits produced, but never densely setose ... 37
36. Pappus of scabrid bristles in several rows and an innermost pappus forming a short crown ... **178. Carduus Linn.**
 Pappus of feathery bristles in several rows ... **179. Cirsium Tourn.**

52. Pappus in 2—3 rows ... 53
 Pappus in 1 or many rows ... 54
53. Outer pappus a row of fimbriated or short bristles
 12. *Fresenia* DC.
 Outer pappus a row of long bristles ... 53a
- 53a. Involucre-bracts in 1 row ... 144. *Lopholaena* DC.
 Involucre bracts in 4—10 rows ... 14. *Pteronia* Linn.
54. Leaves decurrent at the base ... 29. *Heteromma* Benth.
 Leaves not decurrent ... 55
55. Heads in a dense corymb ... 9. *Eupatorium* Linn.
 Heads solitary or in lax corymbs ... 56
56. Involucre-bracts in 1 row; pappus of delicate caducous bristles in many rows ... 145. *Gynura* Cass.
 Involucre bracts in 3—10 rows; pappus not caducous, in 1—2 rows ... 57
57. Outer involucre-bracts resembling the leaves
 30. *Pentheriella*
 O. Hoffm. & Muschler
 Outer involucre-bracts not resembling the leaves ... 57a
- 57a. Pappus of stiff bristles, normally in 2 rows
 14. *Pteronia* Linn.
 Pappus of fine bristles in 1 row ... 28. *Chrysocoma* Linn.
58. Tails of anthers ciliate ... 59
 Tails of anthers not ciliate ... 60
59. Heads sessile, terminal and axillary ... 182. *Dicoma* Cass.
 Heads on long or short peduncles ... 183. *Gerbera* Cass.
60. Spiny or spinescent shrubs ... 61
 Plants not spiny or spinescent ... 62
61. Leaves pungent; style-branches filiform ... 4. *Hoplophyllum* DC.
 Leaves not pungent; style-branches truncate at the apex
 60. *Pterothrix* DC.
62. Style-branches filiform ... 63
 Style-branches flat, obtuse or truncate at the apex, very rarely the style undivided ... 64
63. Pappus of few caducous bristles in one row 2. *Erlangea* Sch. Bip.
 Pappus in 2 rows; the outer row usually of short scales or of bristles
 5. *Vernonia* Schreb.
64. A scrambling herb; heads arranged in a panicle
 81. *Anisochaeta* DC.
 Woody or herbaceous shrubs; heads solitary or variously arranged but not in a panicle, if in a panicle then the inner involucre-bracts with a petaloid appendage ... 65
65. Pappus double, either all bristles or 1 row of paleae ... 66
 Pappus in a single row ... 68
66. Leaves pinnatifid ... 83. *Anisothrix* O. Hoffm.
 Leaves sometimes toothed but not pinnatifid ... 67

67. Outer pappus row of paleae... ... **84. *Pegolettia* Cass.**
Both pappus rows of bristles ... **79. *Iphiaona* Cass.**
68. Inner involucre-bracts with a white or coloured apical appendage ... 69
Inner involucre-bracts without an apical appendage 71
69. Pappus of scabrid bristles **61. *Metalasia* R. Br.**
Pappus of barbellate or plumose bristles 70
70. Pappus bristles plumose from the base **51. *Helipterum* DC.**
Pappus bristles plumose in the upper portion **50. *Anaxeton* Gaertn.**
71. Heads grouped in small rounded heads or packed in a spike-like inflorescence or spicately arranged at the apices of the branches ... 71a
Heads not as above 72
- 71a. Style of disc-floret swollen at the base and seated on a waxy disc **58. *Disparago* Gaertn.**
Style not seated on a waxy disc ... **59. *Elytropappus* Cass.**
72. Heads small, densely cymose with the cymes sometimes arranged in a corymbose panicle 73
Heads solitary, clustered, or arranged in corymbs, not in cymes ... 74
73. Ovary 8—10-ribbed or 5-angled ... **53. *Stenocline* DC.**
Ovary not ribbed or angled ... **55. *Leontonyx* Cass.**
74. Outermost bracts shortly fimbriate, scabrid on the back or sometimes ciliate and pilose on the back ... **77. *Bojeria* DC.**
Involucre-bracts glabrous ... **54. *Helichrysum* Mill.**
75. Receptacle with distinct paleae subtending the florets 76
Receptacle smooth, honeycombed fimbriate, or setose, but without distinct paleae, sometimes the margins of the pits produced and enveloping at least the ovary, rarely the marginal florets subtended by the innermost bracts 113
76. Pappus none (at least in the disc-florets) 77
Pappus of disc-florets of distinct bristles, or awns, or intertwining hairs, or of paleae or scales, sometimes double of bristles and paleae, bristles often deciduous, rarely a ring of minute hairs 89
77. Leaves opposite 78
Leaves alternate, sometimes radical 83
78. Ovary of marginal female floret enclosed in a spiny bract or ovary of disc-floret produced into a stout barbellate awn 79
Ovary of marginal or disc-florets not as above 80
79. Prostrate plants; heads subsessile in pairs at the apex of the branches or in the axils of the leaves ... **94. *Acanthospermum* Schrank**
Erect plants; heads long peduncled, with the peduncle often thickened below the head ... **97. *Zinnia* Linn.**
80. Woody plants 81
Herbs 82
81. Heads densely woolly, with the hairs from the paleae **115. *Erioccephalus* Linn.**
Heads not woolly ... **118. *Eumorphia* DC.**

82. Heads arranged in lax leafy panicles ... 98. *Siegesbeckia* Linn.
Heads solitary, peduncled, terminal, or axillary ... 106. *Spilanthes* Jacq.
83. Heads densely woolly, with the hairs from the paleae ... 115. *Eriocephalus* Linn.
Paleae not woolly, sometimes sparsely pilose but then plants herbs ... 84
84. Ovary and/or style in marginal florets abortive or none ... 85
Ovary and style in marginal florets developed ... 87
85. Anthers distinctly tailed ... 92. *Osmitopsis* Cass.
Anthers obtuse or minutely sagittate or shortly eared ... 86
86. Involucre-bracts in 1 row, leafy ... 100. *Sclerocarpus* Jacq.
Involucre-bracts in 3 to many rows ... 121. *Anthemis* Linn.
87. Woody shrubs ... 118. *Eumorphia* DC.
Herbaceous plants ... 88
88. Involucre-bracts in 1 row ... 108. *Chrysanthellum* L. C. Rich.
Involucre-bracts in 3 rows ... 116. *Lasiospermum* Lag.
89. Leaves opposite, ternate, if spirally imbricate then heads grouped together within a common involucre ... 90
Leaves, at least the upper, alternate, very rarely the lower leaves opposite ... 97
90. Heads grouped together within a common involucre ... 117. *Eroeda* Levyns
Heads not grouped together within a common involucre ... 91
91. Pappus of disc-florets of 3—4 awns armed with retrorse bristles ... 109. *Bidens* Linn.
Pappus of disc-florets of hairs, paleae, or awns, but awns not with retrorse bristles ... 92
92. Pappus a ring of minute hairs ... 99. *Eclipta* Linn.
Pappus of long or short paleae or of 2 awns and short paleae ... 93
93. Pappus of paleae ... 94
Pappus of paleae and awns ... 95
94. Paleae much shorter than the ovary ... 103. *Aspilina* Thou.
Paleae longer than the corolla ... 110. *Galinsoga* Ruiz & Pav.
95. Heads arranged in a paniculate manner at the ends of the branches ... 101. *Blainvillea* Cass.
Heads solitary ... 96
96. Pappus of 2 subbarbellate persistent awns and a crown of short unequal paleae ... 102. *Wedelia* Jacq.
Pappus of 2 subcaducous awns and a crown of minute paleae ... 105. *Melanthera* Rohr.
97. Anthers obtuse or faintly eared at the base, not sagittate or tailed ... 98
Anthers sagittate or tailed at the base ... 103
98. Style-branches of disc-florets truncate and penicillate at the apex ... 99
Style-branches of disc-florets not truncate and penicillate at the apex ... 100
99. Marginal florets neuter ... 162. *Ursinia* Gaertn.
Marginal florets female, sterile or fertile ... 163. *Ursinopsis* Phill.

100. Ovary of disc-floret keeled on each face and with a broad ciliate wing which is deeply lobed above ... 107. *Verbesina* Linn. ... 101
Ovary of disc-floret not winged
101. Ovary and style of marginal florets not developed 104. *Tithonia* Desf.
Ovary and style of marginal floret developed 102
102. Heads distinctly radiate 19. *Amellus* Linn.
Heads not radiate, appearing discoid 22. *Erigeron* Linn.
103. Leaves cordate at the base or prominently decurrent on the branches... 104
Leaves not cordate or decurrent, if slightly decurrent then heads arranged in a corymb 105
104. Leaves petioled, with the blade cordate at the base 86. *Philyrophyllum* O. Hoffm.
Leaves prominently decurrent ... 88. *Ondetia* Benth.
105. Ovary of disc-floret albo-villous ... 78. *Minurothamnus* DC.
Ovary of disc-floret not albo-villous 106
106. Ovary of marginal florets 3-angled or 3-winged, produced into three beaks 90. *Callilepis* DC.
Ovary of marginal florets not 3-beaked, rarely angled 107
107. Pappus of disc-floret of delicate intertwining hairs or caducous or persistent scabrid bristles 108
Pappus of disc-floret of paleae, rarely with an additional solitary scabrid bristle 110
108. Pappus of intertwining hairs ... 47. *Petalacte* D. Don
Pappus of caducous or persistent bristles 109
109. Ovary of disc-floret abortive; style short, discoid at the apex 39. *Ifloga* Cass.
Ovary of disc-floret not abortive; style deeply divided 109a
- 109a. Paleae glumaceous as long as the florets 46. *Cassinia* R. Br.
Paleae not glumaceous, about as long as the achenes 54. *Helichrysum* Mill.
110. Leaves petioled 91. *Anisopappus* Hook. & Arn.
Leaves sessile 111
111. Ovary of disc- and marginal-florets villous 89. *Geigeria* Greiss.
Ovary of disc- and marginal-florets glabrous or glandular, rarely pilose 112
112. Rays white 93. *Osmites* Linn.
Rays yellow 67. *Relhania* L'Hérit.
113. Pappus none 114
Pappus of bristles or paleae, sometimes of bristles and paleae, often caducous, sometimes of a single bristle, or represented by a small crown, or of setose awns as long as the corolla-tube 143
114. Leaves opposite 115
Leaves alternate, sometimes radical 117
115. Corolla of disc-floret 4-lobed ... 129. *Cotula* Linn.
Corolla of disc-floret 5-lobed 116

116. Heads small, aggregated into a false head; disc-florets fertile
 111. *Flaveria* Juss.
 Head usually large, solitary and peduncled; disc-florets sterile
 159. *Osteospermum* Linn.
117. Disc-floret 4-lobed 118
 Disc-floret 5-lobed 124
118. Style branches of the disc-florets lanceolate at the apex
 15. *Dichrocephala* L'Hérit.
 Style branches of disc-florets truncate at the apex 119
119. Marginal florets sterile 120
 Marginal florets female 121
120. Leaves more or less obovate, pinnately or digitately lobed
 123. *Lidbeckia* Berg.
 Leaves ericoid, crowded 125. *Thaminophyllum* Harv.
121. Corolla of marginal floret absent ... 129. *Cotula* Linn.
 Corolla of marginal floret present 122
122. Leaves undivided, entire 124. *Inezia* Phill.
 Leaves divided 123
123. Involucre-bracts with membranous margins and apices
 126. *Matricaria* Linn.
 Involucre-bracts not membranous at the apices and on the margins
 130. *Schistostephium* Less.
124. Apparent head consisting of many small individual heads collected on a
 convex ovoid or elongate common receptacle
 38. *Sphaeranthus* Linn.
 Heads not arranged as above 125
125. Marginal florets neuter 126
 Marginal florets female 127
126. Woody shrubs; heads sessile ... 173. *Cullumia* R. Br.
 Herbaceous plants; heads peduncled 126a
- 126a. Ovary of disc-floret with a marginal wing
 157. *Castalis* Cass.
 Ovary of disc-floret not winged ... 168. *Arctotheca* Wendl.
127. Fruit a drupe 161. *Chrysanthemoides*
 Fruit a dry achene Tourn. 128
128. Anthers sagittate or tailed at the base 129
 Anthers blunt or faintly eared at the base 135
129. Leaves biconvex in cross-section; pungent at the apex
 66. *Anaglypha* DC.
 Leaves flat, not pungent at the apex 130
130. Marginal florets filiform 131
 Marginal florets forming distinct rays 132
131. Receptacle flat 36. *Nicolasia* Sp. Moore
 Receptacle concave with the marginal-florets on the rim and the disc-
 florets on the concavity 37. *Epaltès* Cass.

132. Disc-florets sterile 133
 All or some of disc-florets fertile 134
133. Corolla of marginal-floret situated obliquely on the ovary; ovary keeled
 with a lateral cavity on each side of the keel **160. Gibbaria** Cass.
 Corolla of marginal-floret not situated obliquely on the ovary; ovary
 without lateral cavities **159. Osteospermum** Linn.
134. Involucre-bracts in 1 row or sub-2-rows **156. Dimorphotheca** Vaill.
 Involucre-bracts in 3—5 rows ... **165. Venidium** Less.
135. Style-branches of disc-florets truncate at the apex 136
 Style-branches of disc-florets undivided or, if divided, then not truncate 140
136. Ovary of disc-floret with a hyaline marginal wing **128. Chrysanthemum** Linn.
 Ovary of disc-floret without a marginal wing 137
137. Woody shrubs or undershrubs 138
 Annual or perennial herbs 139
138. Involucre-bracts in 1 row or sub-2-rows **154. Gamolepis** Less.
 Involucre-bracts in 4—5 rows ... **122. Phymaspermum** Less.
139. Corolla-tube of marginal-floret split to the base **126. Matricaria** Linn.
 Corolla-tube of marginal-floret not split to the base **155. Psilothonna** E. Mey.
140. Pappus present in marginal-florets ... **151. Gymnodiscus** Less.
 Pappus absent in marginal-florets 141
141. Corolla of marginal-floret with a distinct 3-toothed limb **158. Garuleum** Cass.
 Corolla of marginal-floret tubular, 2—4-fid, without a limb 142
142. Heads arranged in corymbs at the apex of the branches **131. Hippia** Linn.
 Heads arranged in panicles, rarely solitary, never in corymbs **132. Artemisia** Linn.
143. Leaves opposite 144
 Leaves alternate and/or radical or closely packed on the branches ... 152
144. Pappus of distinct bristles, sometimes an outer pappus of scales ... 145
 Pappus of separate paleae or paleae in a crown, rarely with 1 or 2
 bristles present 149
145. Anthers tailed at the base **71. Antithrixia** DC.
 Anthers blunt at the base 146
146. Pappus in 2 rows; outer row of scales; inner row of long scabrid bristles **13. Engleria** O. Hoffm.
 Pappus in 1—3 rows, but then all bristles which are sometimes caducous,
 rarely with 1—3 lateral paleae as well 147
147. Pappus absent in marginal-florets ... **16. Charieis** Cass.
 Pappus present in marginal-florets 148
148. Marginal-florets subtended by the innermost bracts **20. Susanna** Phill.
 Marginal-florets not subtended by the innermost bracts **21. Aster** Linn.

149. Receptacle with very deep pits in which the ovaries are embedded
 Receptacle not as above 150
 176. Didelta L'Hérit.
150. Leaves pinnately compound... .. **114. Tagetes** Linn.
 Leaves simple 151
151. Heads aggregated into a false head; pappus absent in the marginal-floret
 Head solitary; pappus present in the marginal-floret
 111. Flaveria Juss.
 65. Nestlera Spreng.
152. A moss-like plant forming cushion-shaped growths
 Plants of various habit, but not as above 153
 64. Bryomorpha Harv.
153. Marginal-florets bisexual and disc-florets female
 Marginal-florets female or neuter; disc-florets bisexual, fertile or sterile 154
 181. Oldenburgia Less.
154. Marginal-florets neuter 155
 Marginal-florets female 165
155. Receptacle with very deep pits in which the ovaries are embedded ... 156
 Ovaries not embedded in deep pits 158
156. Plants developed from a fruit in a mature head which is often seen at the
 base of the plant 157
 Plants arising not as above **174. Berkheya** Ehrh.
157. Pappus of disc-floret of linear ciliate bristles longer than the ovary
 Pappus of disc-floret a crown of linear acuminate-ciliate scales about as
 long as the ovary **175. Cuspidia** Gaertn.
 **176. Didelta** L'Hérit.
158. Involucre-bracts free 159
 Involucre-bracts connate into a cup at least at the base... .. 162
159. Anthers tailed at the base, with the tails usually ciliate* 160
 Anthers sagittate at the base 161
160. Corolla of disc-florets bilabiate; heads on long or short peduncles
 Corolla of disc-florets tubular; heads sessile
 183. Gerbera Cass.
 182. Dicoma Cass.
161. A branched undershrub **80. Cypselodontia** DC.
 Caulescent or stemless herbs **168. Arctotheca** Wendl.
162. Receptacle basin-shaped **169. Gorteria** Linn.
 Receptacle convex or conical 163
163. Herbaceous plants; leaves usually radical **170. Gazania** Gaertn.
 Annual or perennial woody shrubs; leaves not radical 164
164. Leaves of involucre spinescent on the margins
 Lobes of involucre sometimes ciliate or scabrid but not spinescent
 172. Berkheyopsis O. Hoffm.
 171. Hirpicium Cass.
165. Style of disc-floret thickened and cylindric above, often with a thickened
 ring at the base of the cylindric portion 166
 Style of disc-florets not as above, usually deeply divided 169

166. Pappus of disc-florets of linear or linear-lanceolate long-acuminate scales, almost as long as the corolla **166. Haplocarpha** Less.
Pappus of small scales shorter than or scarcely longer than the ovary 167
167. Ovary of disc-floret with a basal tuft or ring of hairs at the base ... 168
Ovary of disc-floret without hairs at the base
165. Venidium Less.
168. Pits of receptacle produced into long-linear processes
164. Arctotis Linn.
Pits of receptacle only slightly produced **167. Landtia** Less.
169. Corolla of marginal-florets usually bilabiate; if unilabiate, then tails of anthers ciliate ... **183. Gerbera** Cass.
Corolla of marginal-florets not as above; anthers if tailed, with the tails not ciliate ... 170
170. Pappus of disc-florets of paleae or scales or in the form of a crown or cup 171
Pappus of disc-florets double, of paleae and bristles or of bristles only in one or more rows, very rarely of a single bristle, often caducous or of setose awns as long as the corolla-tube ... 176
171. Anthers sagittate or tailed at the base ... 171a
Anthers obtuse at the base ... 173
- 171a. Receptacle densely setose ... **180. Centaurea** Linn.
Receptacle not setose ... 172
172. A subherbaceous annual; branchlets bearing the heads woolly at the ends **41. Artemisiopsis** Sp. Moore
Erect or prostrate shrubs; heads solitary, terminal, or sessile in the forks of the branches ... **65. Nestlera** Spreng.
173. Ovary of disc-floret obovate, with a hyaline marginal wing
128. Chrysanthemum Linn.
Ovary of disc-floret not winged ... 174
174. Corolla of disc-floret 4-lobed ... **126. Matricaria** Linn.
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175. An unbranched herb; leaves radical and cauline
127. Lepidostephium Oliv.
Shrubs or undershrubs ... **122. Phymaspermum** Less.
176. Pappus double, of paleae and bristles ... 177
Pappus of bristles only or of setose awns as long as the corolla-tube ... 183
177. Individual heads massed into subglobose heads at the ends of the branches ... **58. Disparago** Gaertn.
Individual heads not massed as above ... 177a
- 177a. Marginal-florets subtended by the innermost involucre-bracts; pappus of a few caducous bristles and 1—3 lateral paleae
20. Susanna Phill.
Heads not as above ... 178
178. Involucre-bracts in 2 rows ... 179
Involucre-bracts in 4—11 rows ... 180
179. Receptacle swollen, discoid ... **41. Artemisiopsis** Sp. Moore
Receptacle flat, not swollen ... **82. Calostephane** Benth.

180. Villous or subwoolly, rarely glabrate herbs
 85. *Pulicaria* Gaertn.
 Woody shrubs or undershrubs, cano-tomentose or glabrous ... 181
181. Pappus of marginal-florets of bristles, often with paleae present as well
 70. *Athrixia* Ker-Gawl.
 Pappus of marginal-florets of short paleae or setae ... 182
182. Heads solitary, terminal, or sessile in the forks of the branches, sometimes shortly peduncled ... 65. *Nestlera* Spreng.
 Heads solitary on long peduncles, sometimes massed in a corymbose manner ... 68. *Leyssera* Linn.
183. Pappus a single bristle; an annual herb favouring damp habitats
 35. *Denekia* Thunb.
 Pappus of several to many bristles ... 184
184. Heads with few or many bracts at the base of the involucre-bracts
 147. *Senecio* Linn.
 Heads without bracts at the base of the involucre-bracts ... 185
185. Involucre-bracts in 1 row, free or more or less connate, rarely truly not in 1 row ... 186
 Involucre-bracts in 2 or more rows ... 194
186. Marginal-florets without a pappus ... 150. *Lasiocoma* Bolus
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187. A marsh herb ... 112. *Cadiscus* E. Mey.
 Herbs or shrubs but not of marshy habitats ... 188
188. Style of disc-floret undivided, with a conical or almost globose appendage at the apex ... 153. *Othonna* Linn.
 Style-branches of disc-florets distinctly divided ... 189
189. Barren anthers present in the marginal-florets
 72. *Heterolepis* Cass.
 Marginal-florets without barren anthers ... 190
190. Acaulescent shrubs 2—6 in. high; leaves pinnately divided
 152. *Ruckeria* DC.
 Plants not acaulescent ... 191
191. An annual herb; leaves shortly amplexicaul at the base
 148. *Oligothrix* DC.
 Herbs, undershrubs, or shrubs; leaves not amplexicaul ... 192
192. Heads on short or long peduncles, terminal or axillary
 149. *Euryops* Cass.
 Heads 2—3 together or solitary, or arranged in corymbs ... 193
193. Heads distinctly radiate ... 146. *Cineraria* Linn.
 Heads not distinctly radiate ... 141. *Hertia* Neck.
194. Barren anthers present in the marginal-florets
 72. *Heterolepis* Cass.
 Barren anthers absent from the marginal-florets ... 195
195. Anthers blunt at the base ... 196
 Anthers sagittate or tailed at the base ... 206

213. Pappus bristles connate at the base or in lower half ... 214
 Pappus bristles free to the base ... 216
214. Inner involucre-bracts with a white or reddish petaloid appendage
 50. Anaxeton Gaertn.
 Inner involucre-bracts without petaloid appendages ... 215
215. Corolla of marginal-floret cylindric, 3—4-toothed; ovary minutely glandular ... **55. Leontonyx Cass.**
 Corolla of marginal-floret with a distinct limb; ovary pilose
 75. Inula Linn.
216. Inner involucre-bracts with a white or reddish petaloid appendage
 50. Anaxeton Gaertn.
 Inner involucre-bracts without petaloid appendages ... 217
217. Corolla of marginal-florets with a distinct limb ... 218
 Corolla of marginal-florets filiform or tubular, minutely toothed or 3—5-lobed or -toothed, without a distinct limb ... 221
218. Ovary of disc-florets crowned with a short membranous cup
 63. Amphiglossa DC.
 Ovary of disc-florets without a membranous cup ... 219
219. Leaves petioled ... **143. Alciope DC.**
 Leaves sessile ... 220
220. Style of disc-floret situated on a beak from the top of the ovary
 74. Printzia Cass.
 Style of disc-floret not situated on a beak from the top of the ovary ... 220a
- 220a. Involucre-bracts often glandular on the back
 69. Macowania Oliv.
 Involucre-bracts not glandular on the back
 70. Athrixia Ker-Gawl.
221. Ovary of disc-floret 8—10-ribbed or 5-angled; marginal-florets 1—2
 53. Stenocline DC.
 Ovary of disc-floret not ribbed, if sometimes ribbed then marginal-florets in several rows ... 222
222. Style-branches of disc-florets truncate at the apex ... 223
 Style-branches of disc-florets not truncate at the apex ... 225
223. Pappus of disc-florets finely plumose **43. Lasiopogon Cass.**
 Pappus of disc-florets smooth or scabrid ... 224
224. Pappus of marginal- and disc-florets of 4—6 delicate bristles
 36. Nicolasia Sp. Moore
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- 224a. Involucre-bracts with an ovate membranous appendage
 45. Gnaphalium Linn.
 Involucre-bracts with apical membranous appendages ... 224b
- 224b. Involucre-bracts glumaceous ... **44. Achyrocline Less.**
 Involucre-bracts not glumaceous ... **34. Pluchea Cass.**
225. Marginal-florets in 1 row ... **44. Achyrocline Less.**
 Marginal-florets in several rows ... 226

226. Involucre-bracts with an ovate membranous appendage; outer bracts woolly 45. *Gnaphalium* Linn.
 Involucre-bracts acuminate, without a membranous appendage 33. *Blumea* DC.
227. Receptacle paleate 186. *Hypochoeris* Linn.
 Receptacle nude 228
228. Pappus in 4 rows of linear or oblong-linear paleae about $\frac{1}{2}$ as long as the ovary 184. *Cichorium* Linn.
 Pappus of long bristles 229
229. Creepers rooting at nodes, found on sand dunes on margin of coastal bush 190. *Launaea* Cass.
 Caulescent or acaulescent plants, not creepers 230
230. Involucre-bracts in 1 row, connate at the base 187. *Urospermum* Scop.
 Involucre-bracts in 3—5 rows 231
231. Leaves grass-like 189. *Tragopogon* Linn.
 Leaves various, but not grass-like 232
232. Erect branched herbs; pappus bristles distinctly plumose 188. *Picris* Linn.
 Erect or acaulescent plants; pappus bristles setose or barbellate; if barbellate then plants acaulescent 233
233. Involucre-bracts glabrous 234
 Involucre-bracts setose or glandular or both 235
234. Achenes long-beaked 192. *Lactuca* Linn.
 Achenes not beaked 191. *Sonchus* Linn.
235. Corolla-tube glandular-pilose 194. *Hieracium* Linn.
 Corolla-tube glabrous 236
236. Achenes beaked 193. *Crepis* Linn.
 Achenes not beaked 185. *Tolpis* Adans.

8734 1. *ETHULIA* Linn., Sp. Pl., ed. 2, p. 1171 (1763)

Heads homogamous, several- to many-flowered. *Involucre* more or less campanulate; bracts herbaceous, in 3 to many series, imbricate, acute or obtuse. *Receptacle* flat, naked. *Corolla-tube* cylindric below, shallowly campanulate above; lobes 5, lanceolate, longer than the campanulate part of the tube. *Anthers* obtuse at the base, with a short ovate membranous apical appendage. *Ovary* distinctly 4-ribbed, glandular between the ribs; style terete, shortly exserted, subulate, bristly. *Pappus* an entire thickened marginal rim.

Erect branched leafy herbs; leaves alternate, entire or serrated; flower-heads small, in a much-branched corymb; flowers red or purple.

Species 10, natives of Africa, Madagascar, Asia, and South America; 1 or 2 species naturalized in South Africa and found in the Transvaal, Zululand, Natal, and through the coastal belt to the East London district. (Type: *E. conzoides* Linn.)

8740 2. *ERLANGIA* Sch. Bip., in Flora, vol. 36, p. 34 (1853)

Heads homogamous, several-flowered. *Involucre* more or less campanulate, bracts in 4—5 rows with the outer gradually smaller, ovate to lanceolate;

sometimes acuminate and acute and hairy and glandular. *Receptacle* flat, naked. *Corolla-tube* cylindric below, gradually widening upwards, sometimes with scattered stalked glands; lobes 5, linear. *Anthers* shortly sagittate at the base, with a lanceolate membranous appendage. *Ovary* ellipsoid or obovate in outline, smooth or obscurely 4-ribbed, sometimes pubescent and glandular; style filiform, exserted; style-branches filiform, inconspicuously hairy. *Pappus* of a few caducous shortly hairy bristles.

Erect herbs; leaves alternate, subsessile or sessile, elliptic or linear-oblong, crenate or serrate or almost entire, minutely pellucid-dotted, glabrous or hairy; inflorescence a lax corymb.

An African genus of 66 species; 3 or 4 species occur in South Africa, recorded from South West Africa, Bechuanaland, the Transvaal, and the Kuruman, Vryburg, and Mafeking districts. (Type: *E. plumosa* (Sch. Bip.) Sch. Bip.)

8746 3. BOTHRIOCLINE Oliv., in Hook. Ic. Pl., p. 30, t. 1133 (1876)

Heads homogamous, many-flowered. *Involucre* subhemispherical or broadly campanulate; bracts in few or many series with the outer rather smaller, with broad scarious margins. *Receptacle* more or less foveolate, convex or plane. *Corolla-tube* cylindric below, widening above; lobes 5, ovate-lanceolate. *Anthers* shortly and bluntly sagittate, with a lanceolate membranous appendage. *Ovary* obovoid, with about 6 prominent rounded ridges; style terete, exserted; style-branches linear, thinly hispid. *Pappus* of a few stiff hispid-scarious caducous bristles.

Herbs; leaves opposite or whorled, subsessile, broadly lanceolate, serrate; inflorescence a terminal corymbose cyme.

An African genus of 14 species; 1 species recorded from the Transvaal. (Type: *B. schimperii* O. & H.)

8749 4. HOPLOPHYLLUM DC., Prodr., vol. 5, p. 73 (1836)

Heads homogamous, 4–6-flowered. *Involucre* narrowly campanulate; bracts in about 7 rows, with the outer smaller, broadly elliptic, spinous-mucronate, glabrous. *Receptacle* flat, fimbriate. *Corolla-tube* tubular; tube glabrous; lobes 5, linear, glandular on the back. *Anthers* long-linear, tailed at the base, with a small ovate membranous appendage. *Ovary* oblong in outline, ribbed, densely villous; style subterete; style-branches long-linear, setose. *Pappus* of many long scabrid bristles.

Spiny shrubs, 3–4 feet high; leaves alternate, linear, pungent; heads sessile, solitary or in small clusters, axillary and terminal.

Endemic; species 2, found in the central and north-western districts of the Cape Province. (Type: *H. spinosum* DC.)

8751 5. VERNONIA Schreb., Gen., vol. 2, p. 541 (1791)

Heads homogamous, 4–40-flowered. *Involucre* ellipsoid, subglobose or somewhat campanulate; bracts in 4–10 rows, elliptic, oblong, linear, lanceolate, rarely almost quadrate, sometimes mucronate or awned, rarely with membranous margins, rarely fimbriate on the margins, usually glandular on the back, glabrous or hairy. *Receptacle* naked, honeycombed, sometimes with the walls of the pits produced. *Corolla-tube* cylindric, more often tubular and gradually widening upwards, sometimes glandular, usually glabrous; lobes linear, sometimes glandular. *Anthers* linear, sagittate at the base, with a lanceolate or linear-lanceolate appendage. *Ovary* ellipsoid, cylindric, or oblong or obovate in outline, often ribbed, usually glandular, glabrous or hairy; style terete; style-branches filiform, minutely glandular-hairy or pilose. *Pappus* in 2 series; outer of short scales or of

bristles equalling the inner row; outer row of many long scabrid bristles which are sometimes subplumose above.

Herbs, shrubs, or climbers, rarely trees or marsh plants; leaves alternate, rarely radical, petioled or sessile, varying in shape from linear to ovate, entire or lobed, sometimes paler beneath, glabrous or hairy; heads solitary and usually on a long peduncle or heads grouped in a corymb or spike, sometimes arranged in a panicle.

Described species between 1,350 and 1,400, natives of Africa, America, Asia, Madagascar, rare in Australia; 49 species recorded from South Africa and found in South West Africa, Bechuanaland, the Transvaal, Swaziland, Zululand, Natal, Basutoland, the Orange Free State, and in the coastal area to the Riversdale district. (Type: *V. noveboracensis* (L.) Willd.)

8764 6. CORYMBIUM Linn., Sp. Pl., ed. 1, p. 928 (1753)

Heads consisting of a single bisexual flower. *Involucre* spindle-shaped; bracts 2, one clasping the other, narrowly boat-shaped, 3-nerved, glabrous, sometimes glandular, sometimes 2—3-fid at the apex. *Corolla-tube* subcampanulate, tubular or cylindric, glabrous; lobes linear-oblong or oblong-elliptic, longer than the tube. *Anthers* linear, shortly sagittate at the base, without a distinct apical appendage. *Ovary* cylindric, densely villous; style thick, terete, usually glandular below the style-branches; style-branches thick, glandular. *Pappus* of fine bristles, joined at the base or of short scales with long fine bristles.

Herbaceous, almost stemless plants; rootstock thick, clothed with long soft silky hairs; leaves radical, linear, parallel-veined, rigid; heads grouped in a lax or dense corymb; peduncle almost naked.

Endemic; species 17, found mostly in the south-western districts of the Cape Province, but extend eastward as far as the Uitenhage and Albany districts. (Type: *C. africanum* L.)

NOTE.—See *Kew Bulletin*, p. 163 (1940).—E. P. P.

8785 7. ADENOSTEMMA Forst., Char. Gen., p. 89, t. 45 (1776)

Heads homogamous, many-flowered. *Involucre* campanulate; bracts in about 3 rows, oblong or oblong-linear, connate below, hairy on the lower portion. *Receptacle* nude, honeycombed. *Corolla-tube* tubular, widening upwards, glabrous or glandular-hairy; lobes 5, ovate, shorter than the tube, glandular-hairy. *Anthers* linear, blunt at the base, either with or without an inconspicuous more or less quadrate apical appendage. *Disc* annular. *Ovary* oblanceolate in outline, glabrous or glandular; style short, terete; style-branches linear, sometimes broadening upwards, much longer than the style. *Pappus* of 3 spathulate-linear lobes, glandular above.

Herbs, 3—4 feet high, usually found in damp places, glandular-pilose or glabrescent; leaves sometimes very large, opposite, petioled, ovate or lanceolate, toothed or subentire, often 3-nerved; heads peduncled, grouped in a panicle.

Species about 20, natives of Africa, South America, and Malaya; 2 species in South Africa recorded from the Transvaal, Zululand, Natal, East Griqualand, and then through the coastal area to the Komgha district; one record from the Kimberley district. (Type: *A. viscosum* Forst.)

8795 8. AGERATUM Linn., Sp. Pl., ed. 1, p. 839 (1753)

Heads homogamous, several-flowered. *Involucre* campanulate; bracts in 2—3 rows, free to the base; outer bracts oblong-linear, inner bracts linear; all ribbed and with membranous margins. *Receptacle* hemispherical, naked, not distinctly honeycombed. *Corolla-tube* cylindric and glandular below,

becoming campanulate above; lobes small, oblong, much shorter than the tube, glandular. *Anthers* linear, blunt at the base, with an oblong membranous appendage. *Ovary* linear-oblong in outline, 5-ribbed and with a few glands on the ribs; style terete; style-branches linear, shorter than the style, glandular. *Pappus* usually of 5 fimbriated or lacerated scales and produced into a long scabrid awn.

Erect branched herbs or shrubs; leaves opposite or the upper alternate, petioled, ovate, with crenate or toothed margins; heads grouped in a dense corymb, rarely in a lax panicle.

Described species about 70, chiefly natives of America; 1 species described from tropical Africa; 1 species occurs as a naturalized weed in South Africa and recorded from the Transvaal, Natal, and Pondoland. (Type: *A. conyzoides* L.)

8816 9. EUPATORIUM Linn., Sp. Pl., ed. 1, p. 836 (1753)

Heads homogamous, few- or many-flowered. *Involucre* tubular; bracts in 1 to many rows, oblong or oblong-lanceolate, sometimes shortly mucronate and glandular on the back. *Receptacle* flat, naked. *Corolla-tube* cylindric below, campanulate above, sometimes sparsely glandular on the cylindric part; lobes 5, small, ovate, much shorter than the corolla-tube. *Anthers* linear, blunt at the base, with an ovate membranous appendage. *Ovary* linear in outline, ribbed, sometimes hairy; style terete; style-branches filiform, shorter than the style, much exserted, glandular. *Pappus* of many bristles in 1 row, often scabrid.

Annual or perennial caulescent herbs or shrubs; leaves alternate, opposite, or sometimes whorled, variously shaped, entire, toothed or rarely dissected; heads grouped in a dense corymb, rarely in panicles.

Described species about 1,300, mostly natives of the New World, sparingly represented in Europe, Asia, and Africa; 1 species recorded from the Transvaal. (Type: *E. cannabinum* L.)

8818 10. MIKANIA Willd., Sp. Pl., vol. 3, p. 1742 (1803)

Heads homogamous, 4-flowered. *Involucre* cylindric; bracts 4—5, in 1 row, linear or linear-lanceolate, 3-nerved; sometimes glandular-hairy. *Receptacle* nude. *Corolla-tube* cylindric or tubular below, sometimes slightly dilated at the base, glabrous; lobes 5, short, ovate, shorter than the upper portion of the corolla-tube. *Anthers* linear, obtuse at the base, with an ovate membranous appendage. *Disc* sometimes present and then a fleshy tubular structure surrounding the base of the style. *Ovary* cylindric, sometimes gradually widening upwards, distinctly 5-angled, glandular; style-branches elongated, acute. *Pappus* of long scabrid bristles.

Climbing shrubs or herbs; leaves opposite, often petioled, often cordate or sagittate at the base; heads small, grouped in a spike, raceme, or corymb which are often paniced.

Described species over 400, but many transferred to other genera; mainly natives of North and South America; 2 species found in South Africa and recorded from the Transvaal, Swaziland, Zululand, Natal, Pondoland, and then southwards to the Albany district. (Type: *M. houstonis* Willd.)

8849 11. SOLIDAGO Linn., Sp. Pl., ed. 1, p. 878 (1753)

Heads heterogamous, radiate, several-flowered. *Involucre* campanulate, turbinate or cylindric; bracts in several rows, ribless, with the inner successively longer and the outer extending well down the peduncle. *Receptacle* small, alveolate. *Ray-florets* female, in 1 series. *Disc-florets* mostly all perfect. *Corolla-tube* narrowly campanulate to tubular; lobes 5. *Anthers*

entire and obtuse at the base. *Style-branches* flattened, with a lanceolate appendage. *Achenes* subterete or angular, more or less 8—12-ribbed, typically glabrous. *Pappus* of many scabrid bristles in 1—2 series.

Perennial caulescent herbs, sometimes shrubby near the base, with the stems usually simple below the inflorescence; leaves alternate, entire or often toothed; heads relatively small, variously grouped.

Described species about 300, mostly natives of America; 1 species occurs as a naturalized weed in the Transvaal. (Type: *S. virgaurea* L.)

8859 **12. FRESENIA** DC., Prodr., vol. 5, p. 328 (1836)

Heads homogamous, 10—30-flowered. *Involucre* campanulate; bracts in 2—5 rows, linear, ovate-lanceolate, sometimes pilose, sometimes ciliate. *Receptacle* naked. *Corolla-tube* tubular, gradually widening upwards, glabrous or bearded or pilose above; lobes small, ovate. *Anthers* linear, obtuse at the base, with an ovate membranous appendage. *Ovary* oblong in outline, densely pilose; style terete; style-branches linear, ovate at the apex, glandular. *Pappus* in 2 rows; outer row of fimbriated scales or short bristles; inner row of long scabrid bristles, sometimes plumose.

Low shrubs or shrubs up to 2—3 feet high, with the branches and branchlets sometimes glandular-pilose; leaves alternate or opposite or fascicled, lanceolate or lanceolate-spathulate or linear-oblong, or linear, sometimes amplexicaul and pilose at the base, usually entire, rarely pinnatilobed, sometimes punctate, sometimes glandular-pilose and ciliate; heads usually long-peduncled and solitary at the end of the branchlets, rarely arranged in panicked corymbs.

Endemic; species 6, recorded from South West Africa and several of the Karoo districts. (Type: *F. leptophylla* DC.)

8861 **13. ENGLERIA** O. Hoffm., in Engl. Bot. Jarhb., vol. 10, p. 273 (1889)

Heads homogamous or heterogamous, radiate, several-flowered. *Involucre* campanulate; bracts in 6 to many rows, varying from linear to linear-lanceolate, 1-nerved, with membranous margins, glabrous. *Receptacle* convex, naked, honeycombed, with the margins of the pits slightly produced. *Ray-florets* female. *Disc-florets* bisexual. *Corolla-tube* tubular, gradually widening from the base upwards; lobes 5, small, ovate. *Anthers* linear, obtuse or obscurely lobed at the base, with an ovate membranous appendage; filaments swollen at the apex. *Ovary* oblong in outline, 4-ribbed or narrowly 4-winged, pilose; style terete; style-branches linear, ovate at the apex, glandular. *Pappus* in 2 rows; outer row of linear or linear-lanceolate scales; inner row of long scabrid bristles.

Subherbaceous plants; leaves opposite or the upper subopposite, petioled, ovate, toothed; heads axillary and solitary on long peduncles or grouped into cymes.

An African genus of 2 species; 1 species recorded from South West Africa. (Type: *E. africana* O. Hoffm.)

NOTE.—The 4 specimens in the National Herbarium which I examined all had homogamous discoid heads.—E. P. P.

8862 **14. PTERONIA** Linn., Sp. Pl., ed. 2, p. 1176 (1763)

Heads homogamous, discoid, 1- to many-flowered. *Involucre* campanulate, ovoid, cylindric or ellipsoid; bracts in 4—10 rows, varying in shape from almost linear to elliptic, gradually increasing in length upwards, sometimes acuminate or spine-tipped, sometimes ciliate, glabrous or hairy. *Receptacle* convex, flat, or concave, often deeply honeycombed and the pits with marginal

setae or lacerate. *Corolla-tube* sometimes cylindric below and tubular above, usually tubular and gradually widening upwards, more rarely subcampanulate above, often chartaceous; lobes 5, triangular, oblong-linear, obovate, much shorter than the tube, sometimes scabrid. *Anthers* linear, obtuse or rarely acute at the base, usually with a lanceolate membranous apical appendage. *Ovary* more or less obovoid, rarely 3-angled, sometimes more or less compressed, often glandular, usually villous, more rarely glabrous; style terete; style-branches linear or oblong-linear, usually lanceolate at the apex, shorter than the style, hairy at the apex. *Pappus* normally in 2 rows, of scabrid barbellate or subpilose bristles, rarely somewhat 1-seriate, often connate at the base into a ring.

Shrubs, much branched, sometimes only a few inches high, rarely with decumbent branches rooting at the nodes, often viscid; leaves mostly opposite, more rarely alternate, varying from linear to ovate, often fascicled, entire or ciliate-serrulate, coriaceous or fleshy, woolly-tomentose, papillose or glabrous, rarely warted or scabrid; heads large or medium size, solitary or corymbose at the end of the shoots.

Species 76, of which number 72 occur in South Africa and a single species described from Southern Rhodesia, Madagascar, and Western Australia. In South Africa the species found principally in the central districts, common in South West Africa; also found in the south-western districts of the Cape Province and as far east as the Port Elizabeth and Albany districts, absent from Natal and the Transvaal. (Type: *P. camphorata* L.)

8866 15. DICHROCEPHALA L'Hérit. ex DC., in Guillemin, Arch. de Bot., vol. 2, p. 517 (1833)

Heads heterogamous, many-flowered, discoid, with the outer florets female and a few inner florets bisexual. *Involucre* somewhat flattened; bracts in 2 rows, oblong, with fimbriated membranous margins. *Receptacle* hemispherical, nude. *Female-florets*.—*Corolla-tube* tubular, minutely 3-lobed, shorter than the ovary. *Ovary* somewhat compressed, glabrous; style minutely bifid. *Pappus* 0. *Bisexual-florets*.—*Corolla-tube* campanulate, glabrous; lobes 4, ovate, about as long as the tube. *Anthers* oblong, obtuse, with a minute apical appendage. *Ovary* obovate, glabrous; style terete; style-branches short, lanceolate, glandular. *Pappus* 0.

Annual herbs; leaves alternate, deeply toothed or lyrato-pinnatifid; heads small, grouped in a terminal panicle or rarely solitary.

Described species 13, natives of Africa, Madagascar, India, Java, and China; 1 species naturalized in South Africa and recorded from the Transvaal, Swaziland, Natal, East Griqualand, Pondoland to the George district. (Type: *D. latifolia* L'Hérit.)

8881 16. CHARIEIS Cass., in Bull. Soc. Philom. Paris, p. 68 (1817)

Heads many-flowered, heterogamous, radiate, with the ray-florets female and the disc-florets bisexual, fertile or the inner sterile. *Involucre* campanulate; bracts in 2 rows, lanceolate and linear, sometimes shortly acuminate, hairy. *Receptacle* naked, discoid. *Ray-florets*.—*Corolla-tube* cylindric, glandular-hairy, produced into a long ligulate limb which is minutely 3-toothed. *Ovary* cylindric or oblong in outline, pilose; style slender; style-branches linear. *Pappus* 0. *Disc-florets*.—*Corolla-tube* cylindric below and campanulate above or tubular and gradually widening upwards; lobes 5, ovate-oblong, much shorter than the tube. *Anthers* truncate at the base. *Ovary* linear or oblong in outline, glandular-pilose; style linear; style-branches linear, ovate and glandular at the apex. *Pappus* in 1 row, of barbellate bristles or subplumose.

Annual herbs; leaves opposite and alternate, long-linear or linear-spathulate, sessile, entire, strigose-hairy; heads solitary at the end of a long peduncle.

Endemic; species 2, extending from Namaqualand, along the coastal belt to the Riversdale district. (Type: *C. heterophylla* Cass.)

8882 **17. GYMNSTEPHIUM** Less., Synops. Compos., p. 185 (1832)

Heads heterogamous, many-flowered, radiate, with the ray-florets female and the disc-florets bisexual and sterile. *Involute* campanulate; bracts in 3—4 rows, linear, oblong, or elliptic, 1-nerved, usually ciliate, glabrous or scurfy on the back. *Receptacle* somewhat concave, honeycombed. *Ray-floret*:—*Corolla-tube* cylindric, almost glabrous or scantily glandular-pilose; limb linear or oblong-linear, minutely 3-fid at the apex. *Ovary* narrowly elliptic in outline, glabrous or glandular; style terete; style-branches flattened, lanceolate or linear. *Pappus* of a few caducous barbellate or subplumose bristles. *Disc-floret*:—*Corolla-tube* cylindric below, narrowly campanulate above or tubular and gradually widening upwards. *Anthers* linear, blunt at the base, with an ovate membranous apical appendage. *Ovary* abortive, ovate-oblong in outline, glabrous; style terete; style-branches lanceolate, glandular-hairy. *Pappus* of a few caducous subplumose bristles.

Shrubby plants, scantily branched; leaves alternate, sessile, linear, usually ciliate, sometimes glandular-hairy; heads usually solitary on long peduncles, more rarely massed in the form of a corymb.

Endemic; species 7, found in the Caledon and Ceres districts and extending to the Humansdorp district. (Type: *G. gracilis* Less.)

NOTE.—The pappus bristles being caducous, fall off very readily and may thus appear absent from the ray-florets. Dr. R. A. Dyer (*Flow. Plant. S. Afr.*, vol. 24, pl. 952 (1944)) comments that if the genus *Gymnostephium* is to be retained and not sunk under *Aster*, emphasis should be placed on the caducous nature of the pappus.—E. P. P.

8883 **18. MAIRIA** Nees, Gen. et Spec. Astereae, p. 247 (1833)
(*Homochroma* DC.)

Heads heterogamous, several- to many-flowered, radiate, with the ray-florets female and the disc-florets bisexual and sterile. *Involute* campanulate; bracts in 3—5 rows, varying from broadly linear to elliptic, sometimes acute and acuminate, sometimes fimbriate above, sometimes with membranous margins, pilose, setose, or glandular. *Receptacle* flat, honeycombed, sometimes with the rims of the pits slightly produced. *Ray-floret*:—*Corolla-tube* cylindric or tubular, glabrous or glandular or with a few scattered hairs; limb elliptic, sometimes spathulate, minutely 3-toothed at the apex. *Ovary* cylindric or linear or obovate in outline, pilose, sometimes glandular; style terete, sometimes not divided above; style-branches linear, obtuse, usually minutely glandular. *Pappus* longer than the corolla-tube, of feathery or barbellate bristles in 1 row. *Disc-floret*:—*Corolla-tube* cylindric below and tubular above, or tubular and gradually widening upwards, often with scattered glandular hairs; lobes 5, small, ovate. *Anthers* linear, obtuse, with a lanceolate or ovate appendage. *Ovary* linear in outline, glabrous, sometimes hairy or glandular; style terete or linear; style-branches lanceolate or linear, subacute, usually glandular. *Pappus* about as long as the corolla-tube, of several barbellate or plumose bristles in 1 row.

Herbaceous or woody plants, sometimes acaulescent; leaves alternate, sessile or petioled, sometimes radical, obovate, elliptic, to linear, entire or toothed, sometimes pilose or scabrid; heads normally solitary on long peduncles, rarely arranged in a corymb; peduncles sometimes woolly; rays yellow.

Endemic; species 15, found in the coastal belt from the Clanwilliam to the Humansdorp district; also recorded from the Zwartberg Pass. (Type: *M. crenata* (Thunb.) Nees)

NOTE.—I can see no justification for keeping *Homochroma* DC. distinct from *Mairia* Nees.—E. P. P.

8887

19. AMELLUS Linn., Syst., ed. 10, p. 1225 (1759)

Heads homogamous and discoid or heterogamous and radiate, many- or several-flowered, with the ray-florets female and the disc-florets bisexual and fertile. *Involucre* campanulate; bracts in 2—3 rows, linear, lanceolate to linear-lanceolate, with membranous margins, tomentose or pilose. *Receptacle* covered with long-linear or linear-lanceolate paleae; paleae sometimes keeled and ciliate on the keel. *Ray-floret*:—*Corolla-tube* cylindric, glandular, produced into an oblong limb which is minutely 3-toothed at the apex. *Ovary* oblong or obovate, pilose or pubescent; style linear; style-branches linear. *Pappus* of 3—4 short barbellate deciduous bristles and small hyaline scales. *Disc-floret*:—*Corolla-tube* cylindric below and tubular above, sometimes with a fringe of glandular hairs at the junction of the tubular and cylindric part, or tubular and gradually widening from the base upwards; lobes 5, obovate, much shorter than the tube, sometimes with a coloured linear gland(?) below the sinus. Anthers linear, obtuse, with a lanceolate appendage. *Ovary* oblong, pubescent or pilose; style linear; style-branches linear, lanceolate at the apex, glandular. *Pappus* in 2 rows, of 3—4 short barbellate deciduous bristles and small hyaline scales.

Herbs or small suffrutices, sometimes with prostrate branches; leaves opposite, upper leaves alternate, entire or few-toothed, strigillose or canescent; heads solitary on a terminal or axillary peduncle; disc-florets yellow; ray-florets blue.

Described species 19—20 mostly South African; 2 described from Mexico; 4 species in South Africa and recorded from South West Africa, Namaqualand, the north-western districts and the south-western districts of the Cape Province, and extending eastwards to the Kingwilliamstown district; also recorded from the Middelburg district. (Type: *A. lychnitis* L.)

8887a 20. SUSANNA Phill., in Journ. S. Afr. Bot., vol. 16, p. 17 (1950)

Heads heterogamous, 14—20-flowered, with female marginal-florets and bisexual fertile or sterile disc-florets. *Involucre* campanulate; bracts in 2—3 rows, linear, acute, pilose, ciliate; outer bracts sometimes subfoliaceous. *Receptacle* nude. *Marginal-florets* subtended by the inner involucre-bracts. *Corolla-tube* tubular, glabrous or sparsely glandular; limb oblong, 3-toothed. *Ovary* more or less obovate in outline, pilose; style filiform; style-branches linear, obtuse. *Pappus* of a few caducous barbellate or subplumose bristles shorter than the corolla-tube and 1—3 lateral paleae. *Disc-floret*:—*Corolla-tube* tubular below, becoming subcampanulate above, glabrous; lobes 4, occasionally 5, small, ovate. Anthers oblong or linear, obtuse at the base, with a lanceolate appendage. *Ovary* obovate in outline, somewhat thickened on the margins, sometimes with an annulus at the apex, ciliate, pilose; style linear; style-branches linear, with a lanceolate apex. *Pappus* as long as or longer than the corolla-tube, of a few caducous barbellate or subplumose bristles and 1—3 lateral paleae.

Small herbs, 1—12 inches high, pilose or setose; leaves alternate or opposite, sessile, linear or spatulate, pilose or setose; heads solitary or 2—4 at the apex of the stem, subsessile or pedunculate.

Endemic; species 3, recorded from South West Africa, Namaqualand, and the Van Rhynsdorp, Gordonia, Laingsburg, Ceres, and Riversdale districts. (Type: *S. microglossa* (DC.) Phill.)

8900

21. ASTER Linn., Sp. Pl., ed. 1, p. 872 (1753)

(*Asterosperma* Less.; *Diplopappus* DC.; *Felicia* Cass.; *Mairea* Nees)

Heads heterogamous, radiate, few- to many-flowered, with the ray-florets female and the disc-florets bisexual and fertile, rarely some or all sterile.

Involucre hemispherical or campanulate; bracts in 2—5 rows, linear to broadly lanceolate, usually with membranous margins, often strigose, pilose or glandular. *Receptacle* flat or slightly convex, often honeycombed, nude. *Ray-floret*:—*Corolla-tube* cylindric, often glandular, produced into a long broadly linear limb, 3-toothed at the apex. *Ovary* obovate or oblong-elliptic or linear in outline, usually pilose or glandular-pilose, sometimes glabrous; style linear; style-branches linear. *Disc-floret*:—*Corolla-tube* cylindric below and tubular or campanulate above, or tubular and gradually widening upwards. *Anthers* linear, blunt at the base, with a lanceolate appendage, filaments often swollen below the anthers. *Ovary* obovate, linear or elliptic-oblong in outline, usually pilose, sometimes glabrous or glandular; style terete or linear; style-branches linear, ovate at the apex. *Pappus* of scabrid, barbellate or plumose caducous bristles in 1—3 rows.

Shrubs, perennial or annual herbs; leaves alternate or opposite, entire, toothed, or rarely incised; heads (in the South African species) solitary and peduncled; rays blue, violet, or white; disc-florets yellow, very rarely purple.

Species described almost 1,000, mostly massed in North America; between 70—80 species in South Africa, widely distributed. (Type: *A. amellus* L.)

NOTE.—The genera *Amellus*, *Mairea*, *Aster*, *Diplopappus*, *Chariels*, and *Gymnostephium* as separated in the *Flora Capensis*, vol. 3, p. 59, 1864, are very closely related. *Amellus* may readily be separated from the others as the receptacle is paleate and *Chariels* may be kept separate as the ray-florets are without a pappus. *Gymnostephium* has a few caducous bristles on the ray-florets which fall off very easily and careful dissection is needed to see them. The remaining genera I do not consider should be kept distinct. The question as to whether the pappus bristles are setose, barbellate, subplumose, or plumose, is one of degree and subject to individual interpretation. In some species remaining in *Aster* the pappus is in more than one row and cannot be separated from *Diplopappus*. Several species placed in the genus *Aster* and which have caducous pappus bristles should, however, be transferred to the genus *Gymnostephium*. Adamson and Salter, *Flora of the Cape Peninsula* (1950) keep *Felicia* distinct from *Aster*.—E. P. F.

8901 22. ERIGERON Linn., Sp. Pl., ed. 1, p. 863 (1753)

Heads heterogamous, discoid, many-flowered; marginal-florets in many rows, female; disc-florets few, bisexual, fertile. *Involucre* hemispherical or campanulate; bracts in 2—4 rows, linear, often hairy. *Receptacle* flat or slightly convex, nude or rarely honeycombed and with short paleae or fimbriate. *Marginal-florets*:—*Corolla-tube* cylindric, with a very short bifid limb hardly wider than the tube. *Ovary* oblong in outline, hairy; style filiform; style-branches linear. *Pappus* of several delicate bristles in 1 row. *Disc-floret*:—*Corolla-tube* cylindric or narrow-tubular, sometimes slightly widened above; lobes 5, lanceolate, much shorter than the tube. *Anthers* linear, obtuse at the base, with a linear-lanceolate appendage. *Ovary* oblong in outline, glabrous; style terete; style-branches linear, lanceolate at the apex. *Pappus* of several delicate bristles in 1 row.

Perennial or annual herbs; leaves alternate, linear or oblong-linear, sessile, scabrid; heads arranged in a corymb or panicle or heads solitary, medium-sized or small.

Described species about 700, widely dispersed especially in temperate regions; 3 species naturalized in South Africa and fairly widely spread. (Type: *E. uniflorus* L.)

8921 23. MICROGLOSSA DC., Prodr., vol. 5, p. 320 (1836)

Heads heterogamous, subradiate, few- to many-flowered, with the ray-florets female and the disc-florets bisexual and fertile or male by abortion. *Involucre* subglobose or campanulate; bracts in 2—4 rows, ovate, elliptic, or linear-oblong. *Receptacle* flat, nude, honeycombed with the rim of the pits slightly or distinctly produced. *Ray-floret*:—*Corolla-tube* cylindric, produced into an oblanceolate limb or into a limb not much wider than the tube, 2—3-fid at the apex. *Ovary* oblong in outline, glandular-pilose or glabrous;

style terete; style-branches linear. *Pappus* of many scabrid bristles in 1 row. *Disc-floret*:—*Corolla-tube* cylindric below and becoming narrowly campanulate above or tubular and gradually widening above; lobes 3—5, ovate, much shorter than the tube. *Anthers* linear, blunt at the base, with an ovate appendage. *Ovary* oblong in outline, glandular-pilose or glabrous; style terete; style-branches flat, ovate and glandular above. *Pappus* of many scabrid bristles in 1 row.

Shrubs, often scandent or twining, glabrous or pubescent; leaves alternate, petioled, sometimes ovate and coarsely toothed; heads arranged in more or less dense panicle corymbs or cymes.

Species 20, natives of Africa, Madagascar, India, and China; 1 species in South Africa extending from Natal, through the coastal area to the Stellenbosch district; also recorded from the Albany district. (Type: *M. volubilis* DC.)

NOTE.—The South African plant is that described in the *Flora Capensis*, vol. 3, p. 87, as *Nidorella mespiliformis* DC.—E. P. F.

8923 24. PSIADIA Jacq., Hort. Schoenbrunn., vol. 2, p. 13, t. 152 (1797)

Heads heterogamous, subradiate, several-flowered, with the marginal-florets female and the disc-florets bisexual and fertile. *Involucre* subglobose or campanulate; bracts in 5 to many rows, ovate to linear, sometimes with somewhat fimbriated margins. *Receptacle* flat, nude. *Ray-florets*:—*Corolla-tube* tubular, produced into a very short ovate limb which is 2—3-toothed. *Ovary* oblong in outline, ribbed, glandular-hairy; style terete; style-branches linear. *Pappus* of barbellate bristles in 1 row. *Disc-floret*:—*Corolla-tube* more or less trumpet-shaped or tubular; lobes 5, ovate, much shorter than the tube. *Anthers* linear, blunt at the base, with a lanceolate appendage; filaments swollen below the base of the anthers. *Ovary* oblong in outline, ribbed, glandular-hairy; style terete; style-branches linear, ovate above. *Pappus* of barbellate bristles in 1 row.

Glabrous shrubs, more or less viscid at the extremities; leaves alternate, linear to lanceolate, narrowed at the base, entire, toothed or crenate, glabrous, viscid; heads arranged in terminal corymbs.

Species 55, natives of Africa and the Mascarene Islands; also recorded from St. Helena; 2(?) species in South Africa, found in South West Africa, the Transvaal, and some north-western districts of the Cape Province. (Type: *P. glutinosa* Jacq.)

8925 25. NIDORELLA Cass., Dict. Sc. Nat., vol. 37, p. 469 (1825)

Heads heterogamous, inconspicuously radiate, several-flowered; ray-florets female; disc-florets bisexual and fertile. *Involucre* campanulate or subglobose; bracts in 3 rows, linear to oblong, usually with membranous margins and glandular. *Receptacle* flat, usually honeycombed and with the rim of the pits sometimes produced. *Ray-florets*:—*Corolla-tube* cylindric, produced into a short oblong limb, usually 2-fid at the apex, sometimes with a linear tongue in front of the limb. *Ovary* oblong in outline, often ribbed, usually hairy; style filiform; style-branches linear. *Pappus* of several scabrid bristles in 1 row. *Disc-floret*:—*Corolla-tube* more or less funnel-shaped, sometimes tubular below and campanulate above, sometimes glandular; lobes 5, ovate, much shorter than the tube. *Anthers* linear or oblong-linear, blunt at the base, with a lanceolate appendage. *Ovary* oblong in outline, sometimes ribbed, usually hairy; style linear; style-branches linear, ovate or lanceolate above, glandular. *Pappus* of several scabrid bristles in 1 row.

Perennial herbs or shrubs, pubescent, villous, or tomentose; leaves alternate, narrow-linear, oblanceolate or elliptic, sometimes ear-clasping at the base, entire, toothed, or incised; heads small, arranged in a corymb, rarely the heads solitary and peduncled; florets all yellow.

Described species 50, natives of Africa, the Mascarene Islands, and Cape Verde Islands; 17 species in South Africa, extending from the Transvaal, Zululand, Natal, Basutoland, to the Uitenhage district; also recorded from Ngamiland and from some north-western districts of the Cape Province. (Type: *N. foliosa* Cass.)

8926 **26. CONYZA** Linn., Sp. Pl., ed. 1, p. 861 (1753)

(*Webbia* Sch. Bip.)

Heads heterogamous, many-flowered, with the marginal-florets female and in many rows and the disc-florets bisexual and all or some fertile. *Involucre* subglobose or campanulate; bracts in 4—5 rows; linear, usually hairy. *Receptacle* flat, honeycombed, with the rim of some of the pits slightly or much produced. *Ray-florets*:—*Corolla-tube* filiform, minutely toothed at the apex, normally much shorter than the style. *Ovary* obovate-linear, glabrous or hairy; style filiform, normally much exserted from the corolla-tube; style-branches linear. *Pappus* of several scabrid bristles in 1 row. *Disc-florets*:—*Corolla-tube* cylindric below, campanulate above, sometimes sparsely glandular; lobes 5, ovate, much shorter than the tube, sometimes shortly apiculate. *Anthers* linear, obtuse at the base, with a lanceolate appendage. *Ovary* linear-oblong, sometimes ribbed, glabrous or hairy; style linear; style-branches flat, lanceolate, hairy. *Pappus* of several scabrid bristles in 1 row.

Annual or perennial herbs, rarely shrubs; leaves alternate, sessile or petioled, entire, toothed, pinnatifid or pinnatifid, sometimes strigose; heads arranged in a corymb or panicle, rarely solitary.

Described species between 300 and 320, natives of tropical and subtropical regions, few in temperate regions; 10 species in South Africa, with a fairly wide distribution. (Type: *C. squarrosa* L.)

8929 **27. NOLLETIA** Cass., in Dict. Sc. Nat., vol. 37, p. 479 (1825)

(*Leptothamnus* DC.)

Heads heterogamous, many-flowered, with the marginal-florets female and the disc-florets bisexual, sterile or fertile. *Involucre* campanulate; bracts in 3 rows, linear to lanceolate, sometimes ribbed, with membranous margins. *Receptacle* flat, nude, sometimes honeycombed. *Ray-florets*:—*Corolla-tube* tubular, minutely and irregularly toothed at the apex, shorter or much shorter than the style. *Ovary* obovate, hairy; style filiform; style-branches linear. *Pappus* of scabrid bristles in 1 row. *Disc-floret*:—*Corolla-tube* tubular below, subcampanulate above; lobes 5, ovate, much shorter than the tube. *Anthers* linear, blunt at the base, with a lanceolate appendage; filaments sometimes swollen below the base of the anthers. *Ovary* oblong-linear, glabrous or hairy; style linear; style-branches linear, flat, lanceolate at the apex, glandular-hairy. *Pappus* of scabrid bristles in 1 row.

Shrubs or suffrutices; leaves alternate, linear or subulate, often rigidly ciliate, sometimes scabrid; heads medium-sized or small, solitary on long peduncles at the apices of the branches.

An African genus of 10 species; 7 species in South Africa, recorded from South West Africa, Ngamiland, Bechuanaland, Griqualand West, the Transvaal, Zululand, Natal, Basutoland, the Orange Free State, and from the Queenstown and Middelburg districts of the Cape Province. (Type: *N. chrysocomoides* Cass.)

8930 28. CHRYSOCOMA Linn., Sp. Pl., ed. 1, p. 840 (1753)(Sect. *Eu-Chrysocoma* Fl. Cap., vol. 3, p. 9)

Heads homogamous, many-flowered; florets bisexual and fertile. *Involute* campanulate or globose; bracts in 4 rows, linear to lanceolate, with membranous margins, glabrous, sometimes glandular. *Receptacle* flat, or convex, nude, sometimes honeycombed. *Corolla-tube* cylindric below, tubular above and gradually widening or tubular and gradually widening upwards, glabrous; lobes 5, lanceolate much shorter than the tube, sometimes with reddish margins. *Anthers* linear, obtuse at the base, with a lanceolate appendage; filaments sometimes swollen below the base of the anthers. *Ovary* obovate, obovate-oblong, or oblong, sometimes with a reddish swelling on the margins, finely hairy; style linear; style-branches flat, linear, ovate and glandular above. *Pappus* of fine scabrid bristles in 1 row.

Branching shrublets; leaves alternate, linear, entire, rarely lobed or pinnatifid, sometimes rigidly ciliate, sometimes setose; heads terminal, solitary on long or short peduncles, sometimes grouped in a corymbose manner; florets yellow.

Described species between 50 and 60, natives of Africa and South America; 12 species in South Africa with a general distribution. (Type: *C. coma-aurea* L.)

8931 29. HETEROMMA Benth., in Benth. et Hook. fil. Gen. Plant., vol. 2, p. 286 (1873)(*Chrysocoma* Sect. *Heteropsis* Fl. Cap., vol. 3, p. 93)

Heads homogamous, several-flowered, discoid. *Involute* campanulate; bracts in 2—3 rows; inner bracts obovate, linear-oblong, or broadly elliptic, usually membranous. *Receptacle* flat, honeycombed. *Corolla-tube* tubular below, campanulate above; lobes 5, lanceolate, shorter than the tube. *Anthers* linear, obtuse at the base, with a lanceolate appendage. *Ovary* oblong in outline, ribbed, glandular; style linear; style-branches flat, lanceolate, glandular. *Pappus* of many scabrid bristles in 1 row.

Herbaceous, 1—4 feet high; leaves alternate, sometimes with radical leaves, elongated and broadly linear, sessile or petioled, decurrent at the base, entire, toothed, or pinnatifid, pubescent or hispid; heads in paniced-corymbs.

Endemic; species 2, found in Natal, Basutoland, the eastern Orange Free State, and the Aliwal North district. (Type: *H. decurrens* (DC.) Benth.)

NOTE.—The plant described in the *Flora Capensis*, vol. 3, p. 95, as *Chrysocoma decurrens* DC. belongs to this genus.—E. P. P.

8931a 30. PENTHERIELLA O. Hoffm. et Muschler, in Ann. Nat. Hofmus. Wein, vol. 24, p. 346 (1910)

Heads homogamous, many-flowered, with the florets bisexual and fertile or the inner often sterile. *Involute* hemispherical or broadly campanulate; bracts in 3 rows, slightly imbricate at the base, broadly lanceolate or ovate-lanceolate; the outer resembling the leaves; the inner smaller and scarious on the margins. *Receptacle* flat or somewhat convex, more or less honeycombed. *Corolla-tube* tubular, abruptly narrowed at the middle, widened above; lobes 5. *Anthers* obtuse at the base. *Ovary* irregularly 5-ribbed, often villous; style-branches short, flat, lanceolate above. *Pappus* of delicate bristles in 1 row, connate at the base.

An unbranched shrub; leaves alternate, entire or with a few teeth; heads medium-sized, arranged in small corymbs at the apex of the branches.

Endemic; species 1, recorded from Van Reenen's Pass. (Type: *P. krookii* O. Hoffm. & Muschler)

8936 31. *BRACHYLAENA* R. Br., in Trans. Linn. Soc., vol. 12, in note (1817)

Plants dioecious, rarely with bisexual florets which are fertile. *Male heads* 1—19-flowered. *Involucre* subglobose, obovoid, or oblong in outline; bracts in 3—7 rows, ovate, lanceolate, or elliptic, sometimes tomentose. *Receptacle* slightly convex, honeycombed. *Corolla-tube* tubular; lobes normally 5, very rarely 6, linear, usually recurved. *Anthers* linear or linear-oblong, tailed at the base, with a lanceolate appendage, sometimes far exerted. *Ovary* (when present) ellipsoid or oblong in outline, ribbed, glandular or pilose; style terete; style-branches flat, lanceolate or linear, sometimes convex on the back. *Pappus* of scabrid bristles in 1 row. *Female heads* 5—10 flowered. *Involucre* ovoid, ellipsoid, or obovoid; bracts in 5—9 rows, ovate to elliptic, sometimes tomentose. *Receptacle* flat, honeycombed, sometimes with the rims of the pits produced. *Corolla-tube* cylindrical or tubular; lobes 5, linear. *Staminodes* sometimes present, 5. *Ovary* more or less obovoid, or oblong or oblong-linear in outline, ribbed, pilose, pubescent, or glandular; style terete; style-branches flat, oblong-linear or linear. *Pappus* of scabrid bristles in 1 row.

Shrubs or trees, sometimes a tree up to 70 feet high; leaves alternate, shortly petioled or subsessile, linear, lanceolate or obovate, glabrate above, often tomentose and paler beneath, usually leathery; heads arranged in racemes or panicles.

Species 23, natives of Africa and the Mascarene Islands; 11 species in South Africa, extending from the Transvaal, Zululand, Natal, Basutoland, and through the eastern districts to the south-western districts of the Cape Province. (Type: *B. neriifolia* (L.) R. Br.)

8937 32. *TARCHONANTHUS* Linn., Sp. Pl., ed. 1, p. 842 (1753)

Plants dioecious. *Male heads* several-flowered. *Involucre* broadly campanulate; bracts 5—6 in 1 row, sometimes connate at the base into a shallow cup, usually tomentose. *Receptacle* somewhat convex, honeycombed, usually covered with long silky hairs. *Corolla-tube* tubular, villous or pubescent, sometimes glandular; lobes 5, lanceolate, recurved. *Anthers* sometimes much exerted, linear, tailed at the base, with a lanceolate appendage. *Ovary* 0; style exerted, undivided or minutely bifid. *Pappus* 0. *Female heads* 1—3-flowered. *Involucre* subglobose (except in the 1-flowered heads); bracts in 2 rows, free, linear, linear-oblong to ovate, tomentose or villous (in the 1-flowered heads they are surrounded by 2—5 free linear bracts). *Receptacle* flat. *Corolla-tube* short, sometimes much shorter than the ovary, tubular usually from a widened base, silky; lobes 4—5, very occasionally 6, lanceolate. *Ovary* obovoid or ellipsoid, densely silky, sometimes also glandular; style terete; style-branches flat, lanceolate-linear. *Pappus* 0.

Trees or shrubs; leaves alternate, petioled or sessile, small to quite large, varying in shape from linear to elliptic and obovate, entire, crenate, rarely 3-lobed at the apex, tomentose and paler beneath; heads small, arranged in terminal and (or) axillary panicles, rarely subsolitary and axillary; the whole inflorescence normally tomentose.

Species 6; 2 described from Mexico; 4 species in South Africa with a wide distribution. (Type: *T. camphoratus* L.)

8939 33. *BLUMEA* DC., in Guillemain, Arch. de Bot., vol. 2, p. 514 (1833)

(*Laggera* Sch. Bip.)

Heads heterogamous, many-flowered, with the marginal-florets in several rows and female and the disc-florets few bisexual fertile or sterile. *Involucre*

campanulate, ovoid or subglobose; bracts in 3—7 rows, linear, acuminate, sometimes recurved, hairy, often glandular. *Receptacle* flat, nude, sometimes honeycombed. *Marginal-florets*:—*Corolla-tube* filiform, minutely 3—4-lobed, shorter than the style, glabrous. *Ovary* linear or oblong in outline, glabrous or hairy; style filiform, exceeding the corolla-tube; style-branches linear. *Pappus* of scabrid caducous, rarely persistent, bristles. *Disc-floret*:—*Corolla-tube* tubular, gradually widening upwards; lobes 5, ovate, glandular or hairy on the back. *Anthers* linear, sagittate or tailed at the base, with a lanceolate appendage. *Pappus* of scabrid caducous, rarely persistent, bristles.

Annual or perennial herbs, rarely shrubby at the base, usually glandular-pubescent, villous, or subwoolly; leaves alternate, sometimes decurrent at the base, linear-oblong to oblanceolate, toothed, lobed or, rarely entire, sometimes densely tomentose; heads usually arranged in a panicle, sometimes in glomerules, rarely solitary.

Species about 180, found in the warmer parts of Africa, Asia, and Australia; also recorded from Madagascar; 7 species in South Africa, recorded from South West Africa, Namaqualand, Ngamiland, Bechuanaland, the Transvaal, Swaziland, Zululand and Natal; also recorded from the north-western districts of the Cape Province. (Type: *B. balsamifera* (L.) DC.)

NOTE.—Bentham and Hooker, *Genera Plantarum*, vol. 2, p. 290, note that the caudate anthers, the rigid involucre-bracts which are often squarrose, and the habit appears to be sufficient to distinguish *Laggera* from *Blumea*. The difference between a tailed anther and a sagittate anther is one of degree and is not of any diagnostic value. The presence or absence of a decurrent leaf-base is not supported by some tangible floral character and could not be used to keep the two genera separate.—E. P. P.

8941 34. **PLUCHEA** Cass., in Bull. Soc. Philom., p. 31 (1817)
(*Pechuel-loeschea* O. Hoffm.)

Heads heterogamous, several-flowered, with the marginal-florets female and in several rows, rarely in 1 row, and the disc-florets bisexual, fertile or sterile. *Involucre* campanulate or ellipsoid; bracts in 3—8 rows, ovate to linear-lanceolate and linear. *Receptacle* concave or convex, sometimes honeycombed. *Marginal-florets*:—*Corolla-tube* narrowly tubular; lobes usually 5, very rarely 4, very short, lanceolate. *Ovary* linear or oblong in outline, glabrous; style linear; style-branches long-linear. *Pappus* persistent or caducous, of scabrid bristles in 1 row. *Disc-floret*:—*Corolla-tube* tubular, sometimes gradually widening upwards, glabrous; lobes 5, linear-oblong, glandular on the margins. *Anthers* linear, tailed at the base, with a lanceolate appendage. *Ovary* 0 or present, when present, then linear in outline and glabrous; style terete, sometimes glandular above; style-branches flat, linear, glandular on the back. *Pappus* persistent or caducous, of scabrid bristles in 1 row.

Bushes or shrubs, rarely perennial herbs, tomentose, villous, glabrous, or sometimes glutinous; leaves alternate, sessile or subsessile, linear to lanceolate, toothed, rarely entire or pinnatifid; heads typically arranged in a leafless corymbose cyme, rarely heads terminal or axillary and solitary or 2—3 together or grouped at the apex of almost leafless branches.

Described species about 90, but probably not all belonging to the genus; 2 species recorded from South Africa and found in South West Africa, Ngamiland, Bechuanaland, the Transvaal, Swaziland, Zululand, and Natal. (Type: *P. odorata* Cass.)

8949 35. **DENEKIA** Thunb., Prodr. Fl. Cap., vol. 2, p. 153 (1800)

Heads heterogamous, several-flowered, with the marginal-florets female and the disc-florets bisexual and sterile. *Involucre* campanulate; bracts in sub-2 rows, lanceolate, ciliate above, glandular-pilose. *Receptacle* slightly convex, nude. *Marginal-florets*:—*Corolla-tube* narrowly cylindric, glabrous; lobes 2, lanceolate. *Ovary* linear in outline, pilose; style linear; style-

style-branches narrow-linear. *Pappus* 0. *Disc-florets*:—*Corolla-tube* narrowly funnel-shaped, sparsely glandular; lobes 5, ovate. *Anthers* linear, tailed at the base, with a lanceolate appendage. *Ovary* linear in outline, glabrous; style terete; style-branches ovate in outline, convex on the back, glandular. *Pappus* of a single delicate bristle which is feathery or fimbriate above.

Annual herbs with fibrous roots, favouring damp places; leaves alternate, vari-ously shaped from linear to long-lanceolate, usually amplexicaul at the base, entire, sometimes remotely toothed, usually white woolly beneath, more rarely glabrous; heads small, arranged in a panicle of corymbs.

Three species recorded, one of which occurs in tropical Africa; in South Africa the genus has been recorded from South West Africa, Bechuanaland, the Transvaal, Natal, East Griqualand, the Orange Free State, and also from the Hay, Vryburg, Kimberley, and Alwal North districts of the Cape Province. (Type: *D. capensis* Thunb.)

NOTE.—There is probably only 1 species.—E. P. P.

8951 36. NICOLASIA Sp. Moore, in Journ. Bot., vol. 38, p. 458 (1900)

Heads heterogamous, many-flowered, with the marginal-florets female and the disc-florets bisexual and fertile or sterile. *Involucre* ovoid or campanulate; bracts in 5—7 rows, linear, sometimes narrowing into a distinct apiculus, glandular on the back. *Receptacle* flat, nude. *Marginal-floret*:—*Corolla-tube* filiform, minutely 3—4-toothed. *Ovary* linear in outline, glabrous; style filiform; style-branches narrowly linear. *Pappus* of 3—4 delicate bristles, scarcely scabrid, sometimes caducous. *Disc-floret*:—*Corolla-tube* tubular, gradually widening upwards, glabrous; lobes 5, ovate, glandular on the back. *Anthers* linear, tailed at the base, with an oblong appendage. *Ovary* linear in outline, glabrous; style terete, long exserted, glandular-hairy, shortly bifid or divided into 2 linear style-branches. *Pappus* 0 or of 4—6 delicate bristles.

Low shrubs; leaves alternate, sessile, linear-ob lanceolate, oblanceolate, or linear-subulate, sometimes decurrent, sometimes prominently 1-nerved beneath and with thickened margins; heads peduncled at the ends of the branches.

An African genus of 8 described species; 7 species in South Africa, found in South West Africa, Ngamiland, and the Transvaal. (Type: *N. heterophylla* Sp. Moore)

8953 37. EPALTES Cass., in Bull. Soc. Philom. Paris, p. 139 (1818)

Heads heterogamous, many-flowered, with the marginal-florets female and the disc-florets bisexual and sterile. *Involucre* campanulate; bracts in 4—7 rows, elliptic to lanceolate, acuminate, glabrous or hairy. *Receptacle* saucer-shaped, with the marginal-florets on the rim and the disc-florets on the concavity. *Marginal-floret*:—*Corolla-tube* filiform, minutely 3-toothed. *Ovary* oblong in outline, glabrous; style exserted; style-branches linear. *Pappus* none. *Disc-floret*:—*Corolla-tube* tubular, widening upwards, glabrous; lobes normally 5, occasionally 6, ovate. *Anthers* exserted, linear, tailed at the base, with an ovate obtuse appendage. *Ovary* 0; style usually exserted, usually densely glandular-hairy on the upper part, simple or minutely bifid. *Pappus* 0.

Erect shrubs from 6 inches to 2½ feet high, usually the stems from a woody root-stock; leaves alternate, sessile, sometimes decurrent, entire, sometimes sparsely toothed, hairy; heads small, usually in short corymbs of 3—6 heads.

Species 17, natives of Africa, Madagascar, India, Cuba, and South America; 4 species in South Africa recorded from South West Africa, Namaqualand, Ngamiland, Bechuanaland, the Transvaal, Zululand, Natal, and the Orange Free State. (Type: *E. divaricata* Cass.)

8955 38. SPHAERANTHUS Linn., Sp. Pl., ed. 1, p. 927 (1753)

Apparent head consisting of many small individual heads collected on a convex ovoid or elongate common receptacle. *Individual heads* heterogamous, few-flowered, consisting of 3—9 female marginal-florets and 1—3 fertile or sterile bisexual-florets. *Involucre* tubular; bracts 3—10, linear to oblong, flat or boat-shaped, fimbriate or pilose above, sometimes ciliate, membranous, rarely hyaline, glabrous, sometimes some bracts glandular on the keel. *Receptacle* flat. *Marginal-floret*:—*Corolla-tube* tubular, sometimes rostrate, shortly 3-lobed at the apex, very occasionally 2-lobed, glabrous. *Ovary* oblong, sometimes bluntly 3-angled, hairy or glandular; style linear, scarcely exerted; style-branches linear. *Pappus* 0. *Disc-floret*:—*Corolla-tube* tubular, glandular; lobes 5, ovate. *Anthers* linear, slightly or distinctly lobed at the base, with a lanceolate appendage. *Ovary* obovoid, glabrous; style terete, exerted, densely glandular-hairy, simple or bifid. *Pappus* 0.

Herbaceous or subwoody plants; leaves alternate, usually decurrent, linear to lanceolate, sparsely or closely toothed, sometimes crenate, or shortly lobed, setose or pilose; common head sessile or peduncled, rarely spherical and at the base of the stem.

Species between 60 and 70, mostly natives of Africa, a few recorded from India, Java, Burma, and Madagascar; 9 species in South Africa, found in South West Africa, Ngamiland, Bechuanaland, the Transvaal, Zululand, and Natal; one record from Tembuland. (Type: *S. indicus* L.)

8967 39. IFLOGA Cass., in Bull. Soc. Philom. Paris, p. 142 (1819)

(*Trichogyne* Less.)

Heads heterogamous, few- to several-flowered, with the marginal-florets 1 to few and female and each subtended by a palea, with the disc-florets 2 to few, bisexual, sterile, not subtended by paleae. *Involucre* somewhat campanulate; bracts in 1—2 rows, obovate, elliptic, to ovate-elliptic, woolly. *Receptacle* somewhat cylindric. *Paleae* ovate, subacuminate, membranous, sometimes with membranous apices. *Marginal-floret*:—*Corolla-tube* tubular, usually widened at the base, minutely toothed, glabrous. *Ovary* ellipsoid, obovoid, or oblong in outline, sometimes somewhat angled, glabrous or pubescent; style filiform; style-branches narrowly linear. *Pappus* normally 0, rarely of a few delicate bristles. *Disc-floret*:—*Corolla-tube* tubular, slightly widened upwards, more rarely subcampanulate above, glabrous; lobes 5, lanceolate. *Anthers* linear, shortly tailed at the base, with a lanceolate appendage. *Ovary* abortive; style short, discoid at the apex, sometimes shortly bifid. *Pappus* of a few delicate bristles, plumose or barbellate above.

Small annual herbs, 1 to a few inches high, to woody shrubs up to 2 feet high, branched or with long unbranched stems; leaves alternate, sessile, linear, sometimes ericoid, entire, usually glabrous; heads small, in the leaf-axils and crowded at the ends of the branches.

Species about 25, mostly African; a few found in India and the Canary Islands; 15 species in South Africa, ranging from South West Africa, through the southwestern districts to Kingwilliamstown; also recorded from the Orange Free State, Basutoland, and a few central districts. (Type: *I. fontanesii* Cass.)

8972 40. AMPHIDOXIA DC., Prodr., vol. 5, p. 246 (1837)

Heads heterogamous, several-flowered; the marginal-florets female; the disc-florets bisexual, fertile or sterile. *Involucre* campanulate; bracts in several rows; outer bracts ovate, woolly; inner bracts linear to linear-oblancoate, spreading, chartaceous, glabrous, milky white. *Receptacle* flat, nude. *Marginal-floret*:—*Corolla-tube* tubular, minutely toothed at the

apex. *Ovary* oblong in outline, glabrous; style linear; style-branches flat, linear. *Pappus* 0. *Disc-floret*:—*Corolla-tube* tubular, glabrous; lobes 5, ovate. *Anthers* linear, tailed, with an ovate appendage. *Ovary* oblong, glabrous; style linear; style-branches flat, truncate at the apex. *Pappus* of a few caducous bristles, somewhat feathery at the apex.

Woolly or cano-tomentose herbs; leaves alternate, linear, entire, sometimes fascicled; heads crowded in a corymbose manner at the ends of the branches.

An African genus of 7 described species; 4 species found in South Africa, ranging from Bechuanaland, the Transvaal, and Natal to the Uitenhage district; also occurs in some north-western districts of the Cape Province. (Type: *A. gnaphaloides* DC.)

8973 41. *ARTEMISIOPSIS* Sp. Moore, in Journ. Linn. Soc., vol. 35, p. 331, t. 8 (1902)

Heads heterogamous, several-flowered, with marginal female florets and a few bisexual sterile and/or fertile disc-florets. *Involucre* campanulate; bracts in 2 rows, linear to linear-lanceolate, ciliate, glandular. *Receptacle* swollen, discoid, nude. *Marginal-floret*:—*Corolla-tube* tubular, glabrous, minutely toothed at the apex. *Ovary* ellipsoid, ribbed, glandular-hairy; style filiform; style-branches narrow-linear. *Pappus* small, coroniform, sometimes also a few bristles present. *Disc-floret*:—*Corolla-tube* funnel-shaped, glandular; lobes 5, ovate. *Anthers* linear-oblong, tailed, with a linear appendage. *Ovary* ellipsoid, glandular-hairy; style short, terete, flat and discoid at the apex, very shortly bifid. *Pappus* coroniform, usually with 3–4 caducous scabrid bristles.

A subherbaceous annual, woolly at the ends of the branchlets bearing the heads; leaves alternate, linear, sessile, mucronate, sometimes with a few remote teeth, mostly glabrous; heads aggregated at the ends of the branches.

A monotypic Africa genus, recorded from South West Africa. (Type: *A. villosa* (O. Hoffm.) Schweickerdt)

NOTE.—O. Hoffmann (*Eng. Bot. Jahrb.*, vol. 20, p. 232, 1895) published a description of a plant he named *Amphidoxa villosa*. In *Journal of the Linnean Society* (see above) Spencer Moore described the genus *Artemisiopsis* and the species *A. linearis*. In 1903, O. Hoffmann (*Kunene Sambesi-Expedition*, p. 411) described a second species of *Amphidoxa* (*A. lasiocephala*) on a collecting of Baum's. I have seen a specimen of Baum No. 67 and also a scrap of Spencer Moore's type specimen and consider them to be identical. Dr. H. G. Schweickerdt in 1937 (*Kew Bulletin*, p. 446) transferred Hoffman's *A. villosa* to Spencer Moore's genus *Artemisiopsis*. The correct synonymy is *Artemisiopsis villosa* (O. Hoffm.) Schweickerdt = *Amphidoxa villosa* O. Hoffm. = *Amphidoxa lasiocephala* O. Hoffm.—E. P. P.

8986 42. *FACELIS* Cass., in Bull. Soc. Philom. Paris, p. 94 (1819)

Heads heterogamous, several-flowered, with marginal female florets and bisexual fertile and sterile florets. *Involucre* more or less oblong in outline; bracts in 5 rows, linear, with a large ovate membranous apical appendage, with the outer bracts woolly at the base, otherwise glabrous. *Receptacle* flat, nude. *Marginal-floret*:—*Corolla-tube* cylindric, minutely toothed, glabrous. *Ovary* more or less obovoid, densely pilose; style filiform, long exserted; style-branches narrow-linear. *Pappus* in 1 row, much exceeding the corolla, of finely plumose bristles which are free above and connate in the lower half. *Disc-floret*:—*Corolla-tube* narrowly tubular; lobes 5, small and tooth-like. *Anthers* sagittate at the base, with an acuminate appendage. *Style-branches* narrow, truncate. *Pappus* in 1 row, of finely plumose bristles which are free above and connate in the lower half.

Annual herbs 6 to 12 inches high, with woolly stems; leaves alternate, sessile, linear-spathulate, truncate and 3-toothed at the apex, woolly beneath; heads aggregated at the ends of the branches.

A genus of 7 described species, natives of America; 1 species is found as a naturalized weed in Natal and the Stutterheim district. (Type: *F. apiculata* Cass.)

8987 **43. LASIOPOGON** Cass., in Bull. Soc. Philom. Paris, p. 174 (1818)

Heads heterogamous, few-flowered, with marginal female florets and fertile or sterile bisexual disc-florets. *Involucre* subcampanulate; bracts in 2 rows, linear, membranous at the apex, woolly. *Receptacle* convex, nude. *Marginal-floret*:—*Corolla-tube* subfiliform, minutely toothed, glabrous. *Ovary* ellipsoid, glabrous or glandular; style filiform, hardly exserted; style-branches narrow-linear, sometimes truncate at the apex. *Pappus* of finely plumose caducous bristles. *Disc-floret*:—*Corolla-tube* tubular, gradually widening upwards, glabrous; lobes 5, ovate. *Anthers* linear, tailed at the base, with a lanceolate appendage. *Ovary* ellipsoid or linear in outline, glabrous or glandular; style filiform; style-branches linear, truncate at the apex. *Pappus* of finely plumose caducous bristles.

Delicate caespitose woolly annuals; leaves alternate, sessile, spatulate, woolly; heads aggregated at the ends of the branches.

Species 4, found in Africa, Spain, Asia, and India; all 4 species occur in South Africa and have been recorded from South West Africa, Namaqualand, the district of Vryburg, the Orange Free State, and the Komgha district. (Type: *L. lanatum* Cass.)

8990 **44. ACHYROCLINE** Less., Synops. Compos., p. 332 (1832)

Heads heterogamous, few-flowered, with 1 row of marginal female florets and fertile or sterile bisexual disc-florets. *Involucre* ellipsoid; bracts in 5—8 rows, ovate to linear, glumaceous, glabrous. *Receptacle* flat, nude. *Marginal-floret*:—*Corolla-tube* tubular, gradually narrowing upwards, minutely toothed, glabrous. *Ovary* ellipsoid, sometimes angled, glabrous; style linear; style-branches linear, truncate. *Pappus* of many caducous setose bristles in 1 row. *Disc-floret*:—*Corolla-tube* tubular, glabrous; lobes 5, ovate. *Anthers* linear, tailed, with a lanceolate appendage. *Ovary* ellipsoid, glabrous; style linear, with a globose swelling at the base; style-branches linear, truncate. *Pappus* of many caducous setose bristles.

Plants more or less frutescent, erect or loosely diffuse, hoary tomentose or glabrescent; leaves alternate, linear to ovate, sometimes decurrent, entire, sometimes with revolute margins, glabrous or tomentose beneath; heads arranged in dense solitary or laxly paniced cymes.

Described species 39, natives of Africa, Madagascar, and America; 2 species recorded from Natal.

8992 **45. GNAPHALIUM** Linn., Sp. Pl., ed. 1, p. 850 (1753)

Heads heterogamous, several-flowered, with marginal female florets in many rows and bisexual fertile or sterile disc-florets. *Involucre* campanulate; bracts in 3—4 rows, lanceolate or linear, with an ovate membranous apical appendage; outer bracts woolly; inner bracts glumaceous. *Receptacle* flat or convex, nude. *Marginal-florets*:—*Corolla-tube* filiform, slightly narrowing upwards, minutely toothed, glabrous. *Ovary* oblong in outline, sparsely hairy or glabrous; style filiform; style-branches linear, truncate. *Pappus* of caducous barbellate or scabrid bristles in 1 row. *Disc-floret*:—*Corolla-tube* tubular; lobes 5, occasionally 4, ovate, sometimes glandular on the back. *Anthers* linear, tailed, with a lanceolate appendage. *Ovary* oblong to linear in outline, sparingly hairy or glabrous; style linear, somewhat swollen at the base; style-branches linear, truncate. *Pappus* of caducous barbellate or scabrid bristles in 1 row.

Herbs, rarely woody at the base, cano-tomentose or woolly; leaves alternate, sessile, rarely petioled, sometimes amplexicaul, entire; heads small, arranged in glomerate cymes, rarely solitary.

Described species between 370 and 380, widely distributed; 26 species recorded from South Africa fairly widely dispersed. (Type: *G. uliginosum* L.)

8994 46. CASSINIA R. Br., in Trans. Linn. Soc., vol. 12, p. 126 (1817)
(*Rhynea* DC.)

Heads heterogamous, few-flowered, with marginal female florets and bisexual or fertile disc-florets. *Involucre* ellipsoid; bracts in 5 rows, lanceolate to linear; outer bracts hairy; inner bracts glabrous. *Receptacle* flat, paleate; paleae linear, as long as the florets, glumaceous. *Marginal-florets*:—*Corolla-tube* cylindric, toothed at the apex, glabrous. *Ovary* linear in outline, glandular-pilose; style filiform; style-branches linear, truncate. *Pappus* of caducous scabrid bristles, barbellate above. *Disc-floret*:—*Corolla-tube* tubular, subcampanulate above, glabrous; bracts 5, ovate. *Anthers* linear, tailed, with a lanceolate appendage. *Ovary* oblong in outline, glandular-pilose; style terete; style-branches linear, truncate. *Pappus* of caducous scabrid bristles, barbellate above.

Shrubs up to 5 feet high, rarely shrublets or herbs; leaves alternate, sessile, lanceolate to linear, sometimes decurrent, entire, sometimes tomentose beneath; heads small, corymbose at the ends of the branches or paniced.

Species 27, nearly all natives of Australia and New Zealand; 1 species recorded from tropical Africa and 1 from South Africa, found in the Transvaal, Zululand, Natal, Griqualand East, and Pondoland. (Type: *C. aculeata* (Labill.) R. Br.)

NOTE.—The Australian species have homogamous heads with all the florets bisexual.—E. P. P.

8995 47. PETALACTE D. Don, in Mem. Werner. Soc., vol. 5, p. 522
(1826)

Heads heterogamous, few-flowered, with a few marginal female florets and several bisexual sterile disc-florets, sometimes a few fertile. *Involucre* more or less obovoid; bracts in 4 rows, linear; inner bracts with a large ovate petaloid membranous appendage, densely villous, subtending the female florets. *Receptacle* flat, paleate; paleae linear, about as long as the florets; the outermost resembling the involucre-bracts. *Marginal-floret*:—*Corolla-tube* cylindric, glabrous; lobes 5, very short. *Ovary* linear in outline, 3-angled, membranous, glabrous; style terete; style-branches linear, obtuse. *Pappus* of caducous delicate intertwining hairs which are barbellate above. *Disc-floret*:—*Corolla-tube* cylindric, becoming campanulate above; lobes 5, ovate. *Anthers* linear, tailed, with an oblong-lanceolate appendage. *Ovary* in sterile florets 0; style-branches truncate, not divided. *Pappus* of caducous delicate intertwining hairs which are barbellate above.

Small shrubby plants from a few inches to 6 feet high, sometimes developing a thick woody rootstock, densely villous-tomentose; leaves alternate, sessile, linear, lanceolate, or spatulate, densely villous-tomentose; heads small, grouped in terminal cymes or corymbs.

Endemic; species 2, ranging from the Clanwilliam district to the southwestern districts of the Cape Province. (Type: *P. coronata* D. Don)

NOTE.—*Petalacte canescens* DC. of the *Flora Capensis*, vol. 3, p. 288, is a species of *Anaxeton* Gaertn.—E. P. P.

8996 48. PETALACTELLA N. E. Br., in Kew Bull., p. 100 (1894)

Heads heterogamous, few-flowered, with a few marginal female florets and a few bisexual sterile florets. *Involucre* campanulate; bracts in 2—3 rows;

outer bracts elliptic to lanceolate, subtending the marginal-florets, pilose; inner bracts spatulate, with a broad membranous margin and a membranous apex, surrounding the disc florets. *Receptacle* flat, nude. *Marginal-floret*:—*Corolla-tube* tubular, minutely toothed, glabrous. *Ovary* compressed, obovate, glandular-pubescent; style terete; style-branches linear, obtuse. *Pappus* 0 or sometimes of 1—2 caducous bristles. *Disc-floret*:—*Corolla-tube* tubular, narrowly campanulate above, glabrous; lobes 5, ovate. *Anthers* linear, tailed, with a lanceolate appendage. *Ovary* 0; style capitate, undivided. *Pappus* of delicate caducous bristles, plumose above.

A dwarf shrub a few inches high, densely branched from a thick woody stem; leaves alternate, ericoid, entire, glabrous; heads small, aggregated at the ends of the branches.

Endemic; species 1, recorded from near Harrismith in the Orange Free State. (Type: *P. woodii* N. E. Br.)

8997 49. PHAENOCOMA D. Don, in Mem. Werner. Soc., vol. 5, p. 554 (1826)

Heads heterogamous, many-flowered, with a few marginal female florets and many bisexual sterile disc-florets. *Involucre* campanulate; bracts in 10—12 rows; outer bracts spatulate with a fimbriated membranous apex; inner bracts linear, with a long petaloid glumaceous appendage. *Receptacle* slightly convex, nude. *Marginal-floret*:—*Corolla-tube* somewhat compressed, tubular, narrowing upwards, 5-toothed, glabrous. *Ovary* oblong in outline, densely villous; style terete, with a globose swelling at the base; style-branches long-linear, obtuse. *Pappus* of many bristles in 1 row, barbellate above. *Disc-floret*:—*Corolla-tube* tubular, gradually widening upwards, glabrous; teeth 5, small, ovate. *Anthers* sagittate at the base. *Ovary* linear in outline; style terete, truncate and undivided at the apex. *Pappus* of many bristles in 1 row, barbellate at the apex.

A rigid shrub 2—3 feet high; leaves minute, imbricated on the small lateral branchlets to form tubercle-like swellings; heads large and showy, terminal, solitary.

Endemic; species 1, found in the south-western districts of the Cape Province and extending eastwards as far as the Mossel Bay district. (Type: *P. prolifera* (L.) D. Don)

8998 50. ANAXETON Gaertn., Fruct., vol. 2, p. 406 (1791)

Heads heterogamous, few-flowered, with usually 1 marginal female floret and 4—6 bisexual fertile or sterile disc-florets, occasionally homogamous with disc-florets only. *Involucre* more or less ellipsoid; bracts in 4—6 rows; outer bracts lanceolate or ovate-lanceolate, often acuminate, pilose or hairy at the base only; inner bracts oblong-linear, linear, or linear-spatulate, with a white or reddish petaloid appendage, obtuse, bifid, or irregularly toothed at the apex, woolly or hairy at the base only. *Receptacle* small, nude. *Marginal-floret*:—*Corolla-tube* tubular, sparsely glandular, 5-toothed, sometimes with shortly stalked glands. *Ovary* ellipsoid, sparsely glandular, sometimes densely villous; style linear; style-branches linear, obtuse. *Pappus* of a few fine bristles in 1 row as long as the corolla-tube or of very short barbellate bristles. *Disc-floret*:—*Corolla-tube* tubular, campanulate, or subcampanulate above, with a few scattered glands; lobes 5, short, ovate, sometimes with shortly stalked glands. *Anthers* linear, tailed, with an ovate appendage. *Ovary* linear in outline, glabrous; style terete, capitate and undivided, rarely deeply 2-lobed with the lobes linear and truncate. *Pappus* of a few delicate bristles in 1 row as long as the corolla-tube or of short barbellate bristles, or shortly plumose in the upper part, sometimes connate in the lower half and free above.

Woody plants varying from a dwarf habit to shrubs over 2 feet high, usually woolly or tomentose; leaves alternate, sessile, linear, oblong, or elliptic, usually with revolute margins, usually pungent at the apex, usually tomentose or woolly beneath, rarely glabrous, sometimes scabrid; heads aggregated at the ends of long peduncles, usually in single groups but sometimes paniced, rarely the groups of heads sessile at the end of the branches.

Endemic; species 7, confined to the districts from the Cape to Swellendam. (Type: *A. arboreum* (L.) Gaertn.)

9000 51. HELIPTERUM DC., Prodr., vol. 6, p. 211 (1837)

Heads homogamous, many-flowered, with the florets bisexual, fertile or some sterile. *Involute* campanulate or ellipsoid, varying in size from small to very large; bracts in about 9 rows; outer bracts usually oblong, with a large ovate lanceolate or oblong-linear glumaceous appendage, sometimes with reflexed acuminate scarious apices, often woolly on the back; inner bracts oblong, with a large lanceolate glumaceous appendage, normally coloured. *Receptacle* flat and nude, sometimes honeycombed and with the margins of the pits slightly or distinctly produced, sometimes fimbriate or paleate. *Corolla-tube* tubular below, widening upwards or campanulate above, glabrous, usually with scattered glands; lobes 5, linear, lanceolate, or ovate, sometimes with stalked glands on the back. *Anthers* linear, tailed, with a lanceolate appendage. *Ovary* ellipsoid, covered with usually closely packed obovoid papillae; style terete, sometimes swollen at the base; style-branches long-linear, obtuse or truncate and penicillate at the apex, rarely with a lanceolate apex. *Pappus* longer or about as long as the corolla-tube, plumose from the base, sometimes connate at the base.

Annual or perennial herbs, rarely shrubs, cano-tomentose, subwoolly or glabrescent; leaves alternate or rarely the lowest leaves opposite, linear, lanceolate to elliptic, entire; heads solitary or 2—3 on long peduncles or corymbose on branched peduncles, white, straw-coloured, pink, or rose in colour.

An African and Australian genus of about 90 species; 19 species occur in South Africa but are not all described, found in the coastal belt from the Clanwilliam to the Albany district; also recorded from the Matjesfontein district.

NOTE.—The papillae covering the ovary when wetted swell and exude threads of mucilage which coalesce and form a mucilaginous sheath round the ovary.—E. P. P.

9002 52. ERIOSPHAERA Less., Synops. Compos., p. 270 (1832)

Heads homogamous, 7—10-flowered, with bisexual discoid florets some of which may be sterile. *Involute* campanulate; bracts in 2 rows, linear, with membranous margins, densely woolly. *Receptacle* flat, nude. *Corolla-tube* tubular, with a few scattered glands; lobes 5, ovate, glandular on the back. *Anthers* linear, sagittate at the base, with a lanceolate appendage. *Ovary* ellipsoid, minutely glandular; style linear; style-branches linear, flat, truncate and penicillate at the apex. *Pappus* of very fine caducous hairs branched on the uppermost part with looped hairs.

A small densely woolly caespitose plant; leaves alternate, sessile, obovate, entire; heads small, aggregated at the ends of the branches and surrounded by the upper leaves, the whole covered with dense woolly hairs.

Endemic; species 1, recorded from Namaqualand, the Calvinia, Cape, Prince Albert, Komgha, and the Fauresmith districts. (Type: *E. oculus-cati* Less.)

9003 53. STENOCLINE DC., Prodr., vol. 6, p. 218 (1837)

Heads homogamous, with few (1—6) florets, with the florets bisexual and fertile, rarely heterogamous with 1—2 marginal florets. *Involute* narrow; bracts in a few series, laxly imbricate, slightly unequal, scarious, coloured,

rigid below; the outer shorter, woolly on the back at the base. *Receptacle* small, nude. *Marginal-florets* (when present):—*Corolla-tube* filiform. *Pappus* of slender caducous bristles in 1 row, often dilated or barbellate at the apex. *Disc-floret*:—*Corolla-tube* slender, tubular, scarcely widened above; teeth 5. *Anthers* sagittate at the base. *Ovary* terete, 8—10-ribbed or 5-angled, glabrous or shortly pilose; style-branches slender, truncate at the apex. *Pappus* of slender caducous bristles in 1 row, often dilated or barbellate at the apex.

Perennial herbs, erect, often woody at the base, cano-tomentose or woolly; leaves alternate, sessile; heads small, densely cymose, with the cymes in a corymbose panicle.

Species 13, natives of Madagascar, South Africa, and Brazil; 1 species recorded from South West Africa.

9006 54. HELICHRYSUM Mill., corr. Pers. Syn., vol. 2, p. 414 (1807)

Heads homogamous, few to many-flowered with the florets bisexual and fertile or rarely the innermost sterile, or heterogamous with a few marginal female florets. *Involucre* hemispherical, campanulate, globose, ovoid, or cylindric; bracts in 3 to many rows, various. *Receptacle* flat, convex, or rarely almost conical, nude or with paleae, pitted or honeycombed, with the margins of the pits produced into persistent bristles or paleae about as long as the achenes. *Marginal-floret* (when present): *Corolla-tube* filiform or cylindric, minutely toothed. *Ovary* ellipsoid; style filiform; style-branches narrow-linear. *Pappus* various. *Bisexual-florets*:—*Corolla-tube* tubular, sometimes widened above, usually glabrous; 5- (rarely 4-) toothed, sometimes glandular on the back of the teeth. *Anthers* linear, sagittate or tailed at the base, with a lanceolate appendage. *Ovary* ellipsoid, or more or less oblong-linear in outline, sometimes ribbed or 5-angled, glabrous, papillose, rarely silky-villous; style linear, often with a swelling at the base; style-branches flat or subterete, truncate or capitate at the apex. *Pappus* of bristles, often caducous; bristles usually in 1 row, rarely in many rows, scabrid, barbellate or subplumose on the uppermost part, never plumose from the base upwards, free or variously connate at the base.

Herbs, undershrubs, or shrubs of various habit, often cano-tomentose or woolly; leaves alternate or very rarely the lower leaves opposite, variously shaped; heads solitary or corymbose at the ends of the branches, rarely sessile and axillary or glomerate; involucre-bracts white, reddish, purplish, tawny, horn-coloured, brownish, or golden-yellow.

Described species over 500, mostly South African, but also found in tropical Africa, the Mascarene Islands, Australia, Europe, and India; 234 species described from South Africa, widely distributed. (Type: *H. orientale* Gaertn.)

NOTE.—In the *Kew Bulletin*, p. 114 (1928) a case was made for the retention of the spelling "Elichrysum" Mill. *Gard. Dict.*, abridg. ed. 4 (1754), but in the *International Rules of Botanical Nomenclature*, p. 138 (1935), the spelling "Helichrysum" is upheld.—E. P. P.

9008 55. LEONTONYX Cass., in Dict. Sc. Nat., vol. 23, p. 561 (1822)

Heads heterogamous, few-flowered, with a few marginal-florets and bisexual fertile or sterile disc-florets, or homogamous with bisexual florets only. *Involucre* campanulate; bracts in 4 rows, lanceolate to linear, sometimes acuminate. *Receptacle* sometimes subglobose. *Marginal-floret*:—*Corolla-tube* cylindric, 3—4-toothed, glabrous. *Ovary* ellipsoid, minutely glandular; style filiform, sometimes swollen at the base; style-branches linear, obtuse. *Pappus* of caducous scabrid bristles. *Disc-floret*:—*Corolla-tube* tubular, slightly widening upwards; lobes 5, ovate, sometimes glandular on the back. *Anthers* sagittate at the base. *Ovary* obovoid, minutely glandular; style

linear; style-branches linear, truncate at the apex. *Pappus* of caducous scabrid bristles, connate at the base, sometimes barbellate on the uppermost portion.

Low herbs or undershrubs, densely cano-tomentose or woolly; leaves alternate, sessile, entire, often spatulate; heads small, subsessile, aggregated in dense woolly terminal cymes.

Endemic; species 8, found in the coastal belt from Namaqualand to Natal, also recorded from the Transvaal, Basutoland, and from the Murraysburg district. (Type: *L. glomerata* (L.) DC.)

NOTE.—Harvey (*Flora Capensis*, vol. 3, p. 205) notes that *Leontonyx* scarcely differs from *Helichrysum*. Though I have carefully examined young heads, I was unable to find any florets with more than 1 row of pappus bristles.—E. P. P.

9010 56. PACHYRHYNCHUS DC., Prodr., vol. 6, p. 255 (1837)

Heads homogamous, about 10-flowered, with the florets bisexual and fertile. *Involute* at first terete-oblong, acuminate, with short leafy accessory scales or bracts; true scales elongated, linear, at length spreading, scarious, shining, glabrous. *Receptacle* flat, nude. *Corolla-tube* tubular, 5-toothed. *Anthers* unknown. *Ovary* ovate in outline, villous; style and style-branches unknown. *Pappus* pilose, the bristles scarcely rough, in several rows, longer than the corolla. *Achenes* ovate, villous, crowned with a glabrous thick beak.

A branching erect suffrutex, with all parts, except the heads, villous-tomentose and canescent; leaves alternate, sessile, crowded, subimbricate, lanceolate or oblong, entire, callous-tipped.

Endemic; species 1, locality uncertain. (Type: *P. xeranthemoides* DC.)

NOTE.—I have not seen a specimen and the above description has been compiled from that in the *Flora Capensis*.—E. P. P.

9037 57. STOEBE Linn., Sp. Pl., ed. 1, p. 831 (1753)

(*Perotriche* Cass.)

Heads 1-flowered. *Involute* oblong or oblong-linear in outline; bracts in several rows; the outer green and somewhat woolly or dry and membranous; the innermost dry and membranous. *Receptacle* nude. *Corolla-tube* tubular, sometimes subglobose above; lobes 5, ovate, lanceolate, or triangular, erect or spreading. *Anthers* linear, sagittate or subsagittate at the base, with a lanceolate appendage. *Ovary* oblong in outline, ribbed or 5-angled, glabrous or villous especially on the ribs; style terete, often more or less swollen at the base and sometimes seated on a waxy disc; style-branches truncate and penicillate at the apex. *Pappus* either of several plumose bristles usually somewhat joined at the base, or 0.

Branched shrubs; leaves small, alternate, often ericoid and twisted, very rarely flat, usually with felt-like hairs on the upper surface, glabrous or hairy on the lower surface; heads normally in small groups or the groups often arranged in a spicate manner at the end of the branches.

Species about 40, natives of Africa and the Mascarene Islands; 34 species occur in South Africa, mostly massed in the south-western districts of the Cape Province, but occur also in the coastal belt to Natal, Basutoland, and the Transvaal. (Type: *S. aethiopica* L.)

9039 58. DISPARAGO Gaertn., Fruct., vol. 2, p. 463, t. 173 (1791)

Heads homogamous or heterogamous, 1—8-flowered, both ligulate and tubular florets present in the same head or in the same aggregate of heads formed by the massing of the heads. *Involute* more or less ellipsoid; bracts

in a few rows, imbricate; inner bracts scarious; outer bracts more or less leafy. *Receptacle* nude. *Ligulate-floret*:—*Corolla-tube* tubular or filiform, with a ligulate limb. *Ovary* more or less ellipsoid or linear in outline, producing an ovule or sterile, glabrous; style terete or filiform; style-branches flat, obtuse. *Pappus* as long as the corolla, plumose on the upper part, sometimes absent. *Tubular-floret*:—*Corolla-tube* glabrous; lobes 5, ovate, recurved. *Anthers* linear, tailed, with a lanceolate appendage. *Ovary* oblong in outline, normally glabrous, occasionally covered with shaggy hairs; style terete, swollen at the base and seated on a waxy disc; style-branches linear, truncate, penicillate. *Pappus* as long as the corolla, of 5—13 bristles plumose on the upper part only, rarely absent, sometimes with a small rim or minute scales external to the bristles.

Small shrubs, sometimes with densely woolly branches; leaves alternate, ericoid, often spirally twisted, often mucronate, usually woolly on the upper surface; individual heads massed into subglobose heads at the end of the branches.

Endemic; species 7, mostly massed in the south-western districts of the Cape Province; also recorded from the high mountains in the Laingsburg and Prince Albert districts. (Type: *D. ericoides* Gaertn.)

NOTE.—The description in the *Flora Capensis*, vol. 3, p. 227, is incorrect so far as the heads are concerned.—E. P. P.

9041 **59. ELYTROPAPPUS** Cass., in Bull. Soc. Philom. Paris, p. 199 (1816)

Heads homogamous, 2—8-flowered, discoid, with the florets bisexual. *Involucre* more or less tubular, sometimes almost vase-shaped; bracts in 3—4 rows, varying from oblong to linear, acute, sometimes acuminate, scarious; outer bracts sometimes leafy or woolly. *Receptacle* nude. *Corolla-tube* tubular, slightly or scarcely widened upwards, rarely ellipsoid below and narrowly campanulate above; lobes 5, ovate, somewhat spreading, sometimes glandular on the back. *Anthers* linear, tailed, with a lanceolate appendage. *Ovary* more or less oblong in outline, sometimes with circular ridges, sometimes ribbed, glabrous, normally with a distinct rim on the top, very rarely with a cup of reflexed hairs on top, glabrous; style terete; style-branches linear, truncate and penicillate at the apex. *Pappus* usually as long as the corolla, plumose in the uppermost portion, connate at the base, rarely of fine caducous bristles shorter than the corolla and plumose at the tip.

Small shrubs; leaves alternate, sessile, entire, sometimes closely adpressed to the branches, linear, sometimes revolute and twisted, sometimes mucronate, woolly above and sometimes beneath, densely glandular or with small spiny outgrowths; heads grouped in small rounded heads or packed in a spike-like inflorescence or spicately arranged at the apices of the branches.

Endemic; species 8, almost all confined to the south-western districts of the Cape Province but also recorded from Namaqualand, the Ladismith, Laingsburg, Sutherland, Oudtshoorn, Murraysburg, Graaff-Reinet, Somerset East, Uniondale, and the Albany districts. (Type: *E. hispidus* Cass.)

9042 **60. PTEROTHRIX** DC., Prodr., vol. 6, p. 279 (1837)

Heads homogamous, 3—10-flowered, with bisexual fertile florets. *Involucre* tubular; bracts in 7—8 rows, varying from ovate and acuminate to long narrow-linear, scarious, with brown tips. *Receptacle* nude. *Corolla-tube* tubular, glabrous; teeth 5, small, ovate, sometimes with glandular margins. *Anthers* linear, tailed, with a lanceolate appendage. *Ovary* oblong, with a membranous wing on one side, with a short membranous cup at the apex, glabrous; style terete, somewhat swollen at the base, seated on a short

pedicel arising from the top of the ovary; style-branches flat, linear, truncate. *Pappus* as long as the corolla, of several plumose caducous bristles in 1 row.

Ericoid shrubs, usually spinescent, sometimes the young branches woolly; leaves alternate, sessile, linear or subulate, glabrous or woolly on the upper surface; heads solitary or in groups of 2—3 at the end of the branchlets.

Endemic; species 4, found in the central and north-western districts of the Cape Province; also recorded from the western Orange Free State and South West Africa (Type: *P. spinescens* DC.)

9043 61. METALASIA R. Br., in Trans. Linn. Soc., vol. 12, p. 124 (1818)

Heads homogamous, 4- to many-flowered, discoid, with the florets bisexual, fertile or some sterile. *Involucre* narrowly campanulate or cylindric; bracts in 4—6 rows; outer bracts oblong, usually acuminate, woolly on the back; innermost-bracts narrowly linear, with a large white or coloured appendage at the apex. *Receptacle* nude. *Corolla-tube* tubular, sometimes cylindric and becoming subcampanulate above, glabrous; lobes 5, small, ovate. *Anthers* linear, tailed, with a lanceolate appendage. *Ovary* oblong, ribbed or angled, normally with a distinct small membranous crown at the apex, glabrous; style linear, swollen at the base; style-branches flat, linear, truncate. *Pappus* as long as the corolla, of many scabrid bristles in 1 row, sometimes the bristles flattened above.

Erect or divaricate ericoid shrubs; branches often cano-tomentose; leaves small, alternate, sessile, entire, usually somewhat twisted, with the margins often incurved; heads small or medium-sized, crowded at the apices of the branchlets, sessile or subumbellate, rarely solitary.

Endemic; species 37, mostly massed in the south-western districts of the Cape Province; 1 species extends eastwards into Natal. (Type: *M. muricata* (Thunb.) R. Br.)

9045 62. LACHNOSPERMUM Willd., Sp. Pl., vol. 3, p. 1787 (1800)

Heads homogamous, several-flowered, discoid, with the florets bisexual and fertile. *Involucre* ellipsoid to campanulate; bracts in about 10 rows, lanceolate, acute or obtuse, sometimes subacuminate, usually with reddish tips, woolly on the back. *Receptacle* flat, with a few paleae between the outer florets; paleae long narrow-linear, about as long as the corolla, sometimes sparsely ciliate above. *Corolla-tube* tubular, sometimes distinctly widening in the upper half, glabrous; lobes 5, oblong, glandular on the back or margins, sometimes shortly ciliate at the apex. *Anthers* tailed, with a lanceolate appendage. *Ovary* oblong, distinctly 4—5-angled, usually villous on the angles, sometimes glandular on the angles; style terete, distinctly or slightly swollen at the base, sometimes seated on an annular disc at the top of the ovary; style-branches flat, linear, truncate. *Pappus* as long as the corolla, of scabrid or shortly barbellate bristles, sometimes with an outer row of short ovate membranous paleae.

Shrubs, slightly cano-tomentose; leaves alternate, small, subtwisted, fascicled; heads medium-sized, solitary at the apices of the branches or 2—3-nate and arranged in a corymbose manner.

Endemic; species 2, recorded from the Paarl, Caledon, and Worcester districts, also from Namaqualand. (Type: *L. ericifolium* Willd.)

9046 63. AMPHIGLOSSA DC., in Prodr., vol. 6, p. 258 (1837)

Heads heterogamous, 6—15-flowered, with 2 marginal female florets, and bisexual fertile disc-florets. *Involucre* ellipsoid or cylindric; bracts in about

10 rows, varying from ovate-lanceolate to long narrow-linear, scarious; the outer bracts sometimes hairy on the back. *Receptacle* nude. *Marginal-floret*:—*Corolla-tube* cylindric or tubular, with a distinct elliptic or oblong 3-toothed limb, glabrous. *Ovary* linear in outline, with a short membranous crown at the apex, glabrous; style filiform; style-branches linear, obtuse. *Pappus* as long as the corolla-tube, of several caducous plumose bristles. *Disc-floret*:—*Corolla-tube* tubular, scarcely widening upwards; lobes 5, very short, ovate or lanceolate. *Anthers* linear, tailed, with a lanceolate appendage. *Ovary* linear in outline, crowned with a short membranous cup, glabrous; style terete, globose at the base, seated on a beak arising the top of the ovary; style-branches flat, linear, truncate. *Pappus* as long as the corolla, of caducous plumose bristles.

Shrubby plants, with branches from a thick woody rootstock, sometimes with long procumbent stems; leaves alternate, sometimes closely packed on small branchlets, ovate to linear, woolly on the under surface; heads solitary or 2—3 grouped at the ends of the branches.

Endemic; species 4, extending from Namaqualand, through the coastal area to the Uitenhage district. (Type: *A. corrudaeifolia* DC.)

9047 64. BRYOMORPHE Harv., Thesaur. Cap., vol. 2, p. 38 (1863)

Heads heterogamous, with marginal female florets and bisexual fertile or sterile disc-florets. *Involucre* narrowly campanulate; bracts in 5 rows, broadly linear, with a suborbicular obtuse apical appendage. *Receptacle* nude. *Marginal-floret*:—*Corolla-tube* glabrous; limb broadly oblong, 3-toothed. *Ovary* linear, glabrous; style linear, subglobose at the base, seated on a short projection from the top of the ovary; style-branches linear, obtuse. *Pappus* as long as the corolla-tube, of a few scabrid bristles. *Disc-floret*:—*Corolla-tube* tubular, slightly widening upwards, glabrous; lobes 5, lanceolate. *Anthers* linear, tailed, with a lanceolate appendage. *Ovary* linear, glabrous; style linear, with a globose swelling at the base and situated on top of a projection from the top of the ovary; style-branches linear, truncate. *Pappus* as long as the corolla, consisting of a few scabrid bristles.

A moss-like plant forming cushion-shaped growths; leaves densely imbricate, linear, concave, mucronate, apiculate, tomentose above; heads small, terminal, sessile, surrounded by the uppermost leaves.

Endemic; species 1, recorded from the Cape, Stellenbosch, Caledon, and French Hoek districts. (Type: *B. lycipodioides* (Sch. Bip.) Levyns)

9048 65. NESTLERA Spreng., Anleit., ed. 2, vol. 2, p. 568 (1818)

Heads heterogamous, few-flowered to about 14-flowered, with marginal female florets and bisexual sterile or fertile disc-florets. *Involucre* tubular, ovoid, or ellipsoid; bracts in 4—11 rows, varying from linear to elliptic, acute or obtuse, sometimes with a membranous appendage which may be 2-fid, sometimes glandular on the back. *Receptacle* nude, sometimes honey-combed and with the rims of the pits sometimes raised, very rarely enveloping the ovary. *Marginal-floret*:—*Corolla-tube* cylindric or tubular; limb oblong-elliptic or elliptic-lanceolate, minutely 3-toothed. *Ovary* linear or oblong in outline, glabrous or sparsely pilose above, rarely densely pilose or villous; style linear; style-branches linear, obtuse. *Pappus* a crown of short setae or setae more or less distinct. *Disc-floret*:—*Corolla-tube* cylindric below, distinctly or narrowly campanulate above, glabrous, rarely glandular; lobes 4—5, lanceolate. *Anthers* linear, distinctly tailed at the base, very rarely shortly eared, with a lanceolate appendage, rarely with an oblong minutely bifid appendage. *Ovary* linear or oblong in outline, densely or

sparsely hairy or glabrous; style linear, in the sterile species undivided; style-branches linear, truncate, penicillate. *Pappus* a crown of short unequal paleae or paleae sometimes distinct, rarely with 2 barbellate bristles as long as the corolla-tube.

Erect or prostrate shrubs sometimes distinctly dichotomously branched, often with thick tap-roots, very rarely an annual, glabrous or cano-tomentose, sometimes glutinous; leaves alternate or opposite, linear, rarely spatulate, entire, often channelled or concave above, glabrous or hairy; heads small or medium-sized, solitary, terminal or sessile in the forks of the branches, more rarely subumbellate, sometimes very shortly peduncled.

Endemic; species 20, widely spread in the Karoo areas from the north-western Cape Province, the central districts to the south-western districts; also recorded from the Riversdale and Uitenhage districts, Natal, the Orange Free State, and Basutoland. (Type: *N. biennis* (Jacq.) Spreng.)

9049 66. ANAGLYPHA DC., Prodr., vol. 5, p. 311 (1836)

Heads heterogamous, many-flowered, with marginal female florets and bisexual sterile disc-florets. *Involucre* campanulate; bracts in 4 rows, lanceolate, acuminate, with narrow membranous margins, glandular on the back. *Receptacle* convex, nude. *Marginal-floret*:—*Corolla-tube* tubular; shorter than the limb, glandular; limb oblong, folded, 3-toothed. *Ovary* small, globose, glandular; style linear; style-branches linear, obtuse. *Pappus* 0. *Disc-floret*:—*Corolla-tube* tubular, widening upwards, glandular on the lower part; lobes 5, lanceolate. *Anthers* linear, sagittate, with an ovate appendage. *Ovary* small, globose; style linear; style-branches flat, linear, truncate, penicillate. *Pappus* 0.

Shrublet about 6 inches high; leaves alternate, linear in outline, biconvex in cross-section, pungent at the apex, scabrid; heads solitary, sessile, at the ends of the branches, surrounded by the upper leaves.

Endemic; species 1, recorded from between the Coga and Zwartkops rivers in the Port Elizabeth district. (Type: *A. asper* DC.)

NOTE.—I have not seen Drège's specimen on which the genus was founded, but a specimen in the National Herbarium (Acocks 14051) collected in the type locality agrees very well with the description given in the *Flora Capensis*.—E. P. P.

9050 67. RELHANIA L'Hérit., Sert. Angl., p. 22, t. 29 (1788)

(*Rosenia* Thunb.)

Heads heterogamous, few- to many-flowered, with marginal female florets, and bisexual fertile or sterile disc-florets. *Involucre* ellipsoid, ovoid, or campanulate; bracts in about 5 rows, varying in shape from ovate to linear, acute or obtuse, sometimes deeply bilobed, sometimes with a broad ovate apical appendage. *Receptacle* flat or somewhat conical, paleate; paleae as long as the corolla, narrowly linear, sometimes spatulate or elliptic above, more rarely broad and enveloping the floret. *Marginal-floret*:—*Corolla-tube* shorter or longer than the limb, tubular, usually glabrous, sometimes glandular; limb broadly linear or elliptic-oblong, minutely 3-toothed. *Ovary* linear or oblong in outline, rarely with 3 prominent ciliated ribs, glabrous or pilose; style linear; style-branches linear, obtuse. *Pappus* a membranous cup or crown or of separate membranous paleae. *Disc-floret*:—*Corolla-tube* tubular and widening above or narrowly campanulate above, glabrous, sometimes glandular; lobes short, ovate. *Anthers* sagittate or tailed at the base. *Ovary* linear in outline, rarely with 2 marginal ciliated ribs, glabrous or more rarely pilose; style linear, sometimes swollen at the base; style-branches linear, truncate, rarely obtuse. *Pappus* a membranous cup or crown or of separate membranous paleae, very occasionally with the addition of a solitary scabrid bristle.

Perennial shrubs, rarely annuals; leaves alternate, rarely opposite, sessile, lanceolate, linear, subulate, or acerose, very rarely obovate, sometimes many-nerved, often pungent, glandular, glutinous or punctate; heads normally solitary, sessile, very rarely pedunculate, terminal, sometimes arranged in a corymbose manner; rays yellow.

Endemic; species 28, mostly in the coastal belt from Namaqualand to Natal; also recorded from Basutoland and from the Vryburg district.

NOTE.—Occasional disc-florets in *Relbunium* have a single bristle as well as a pappus of paleae. The presence of 1 or 2 bristles in *Rosenia* has been used as a diagnostic character to separate it from *Relbunium* but, as a bristle may occasionally be found in *Relbunium*, it is of no value as a generic difference.—E. P. P.

9052

68. LEYSSERA Linn., Sp. Pl., ed. 2, p. 1249 (1763)

Heads heterogamous, many-flowered, with female marginal-florets and bisexual fertile disc-florets, though some may be sterile. *Involucre* campanulate; bracts in 4—7 rows, oblong to broadly linear, acute or obtuse, sometimes with dark margins, usually chartaceous, glabrous, usually glandular. *Receptacle* nude, sometimes fimbriate. *Marginal-floret*:—*Corolla-tube* cylindric, about as long as the limb, glandular; limb oblong-linear, oblong-elliptic, or obovate-oblong, minutely 3-toothed. *Ovary* linear in outline, glabrous or pilose; style linear; style-branches linear, obtuse. *Pappus* of narrow membranous paleae. *Disc-floret*:—*Corolla-tube* cylindric or cylindric in the lower half and tubular in the upper half, glandular; lobes 5, lanceolate. *Anthers* linear, tailed, with an oblong obtuse appendage. *Ovary* linear in outline, glabrous or pilose; style linear; style-branches linear, truncate, penicillate. *Pappus* double, of membranous paleae and 4—5 plumose bristles as long or longer than the corolla.

Mostly undershrubs, cano-tomentose or almost glabrous; leaves alternate, linear or acerose, usually mucronate, often woolly, sometimes glandular; heads solitary on long peduncles, sometimes massed in a corymbose manner.

Species 7, of which number 6 occur in South Africa, 1 in tropical Africa; 1 species recorded from the Mediterranean region; in South Africa recorded from South West Africa, Namaqualand, the south-western districts of the Cape Province, through the coastal area to the Uitenhage district; also recorded from the Stutterheim, Stockenström, and the Barkly East district, and in the central area from the Calvinia, Hay, Prieska, Fraserburg, Queenstown, Prince Albert, De Aar, Fauresmith, Victoria West, and the Middelburg districts. (Type: *L. gnaphalioides* (Burm.) L.)

9053

69. MACOWANIA Oliv., in Hook. Ic. Pl., p. 49, pl. 1062 (1867—71)

(Homochaete Benth.)

Heads heterogamous, many-flowered, with marginal female florets and bisexual fertile or sterile disc-florets. *Involucre* campanulate; bracts in 5—7 rows, varying from ovate to linear or broadly linear, acute, sometimes acuminate, glandular or sometimes hairy on the back. *Receptacle* flat, nude, sometimes honeycombed. *Marginal-floret*:—*Corolla-tube* cylindric or tubular, somewhat shorter than the limb, glabrous or with a few glandular hairs; limb oblong, linear-oblong, or elliptic, minutely bifid or trifid. *Ovary* linear in outline, sometimes ribbed, pubescent or pilose, sometimes glandular; style linear; style-branches linear, obtuse. *Pappus* of scabrid or barbellate bristles, longer or shorter than the corolla-tube, sometimes caducous. *Disc-floret*:—*Corolla-tube* tubular in the lower part, narrowly campanulate above, glabrous, or with a few glandular hairs; lobes 5, small, ovate. *Anthers* linear, tailed, with a blunt lanceolate appendage. *Ovary* linear in outline, sometimes ribbed, pubescent, pilose, or glandular-hairy; style terete; style-branches linear, truncate or obtuse, sometimes the branches

shortly bifid. *Pappus* of scabrid or barbellate bristles, as long as or shorter than the corolla, sometimes caducous.

Shrubs up to 2 feet high or compact cushion-shaped plants 9 inches high; leaves alternate, sessile, linear, with revolute margins, usually punctate, sometimes glandular-hairy, sometimes the young leaves woolly beneath; heads solitary, sessile at the end of the branches.

Endemic; species 5, recorded from the high mountains of Natal and Basutoland and from the Kingwilliamstown and Queenstown districts and from the northern Transvaal. (Type: *M. revoluta* Oliv.)

NOTE.—Very near *Athrixia* and perhaps should be sunk under this genus. The type species differs from the 2 species (*M. glandulosa* and *M. pulvinervis*) described by N. E. Brown, in the pappus bristles being shorter than the corolla-tube. I found that I could not satisfactorily separate *Homochaete* Benth. from *Macowania* Oliv. Benth. describes the disc-florets as fertile but, in a capitulum from the type specimen presented to the National Herbarium by Kew, I found only 4 disc-florets with an embryo and the rest were sterile.—E. P. P.

9055 70. *ATHRIXIA* Ker-Gawl., in Bot. Reg., t. 681 (1822)

Heads heterogamous, several- to many-flowered, with marginal female florets and bisexual fertile or sterile disc-florets. *Involucre* campanulate or more or less ellipsoid; bracts in 6—8 rows, lanceolate to linear, acute, sometimes acuminate, sometimes recurved, often ciliate above and woolly on the back. *Receptacle* nude, sometimes honeycombed, flat or convex. *Marginal-floret*:—*Corolla-tube* usually cylindric, more rarely tubular, shorter than or as long as the limb, glabrous; limb varying from linear to oblong, minutely 3-toothed, sometimes glandular on the back. *Ovary* linear in outline, glabrous or finely pilose, sometimes glandular, sometimes with a ring of hairs at the base; style linear, sometimes slightly swollen at the base; style-branches linear, obtuse. *Pappus* of scabrid or barbellate bristles, often with small paleae as well; bristles sometimes caducous, leaving the narrow paleae. *Disc-floret*:—*Corolla-tube* tubular, slightly widening upwards, glabrous; lobes 5, ovate. *Anthers* linear, tailed, with an oblong obtuse appendage. *Ovary* linear in outline, glabrous or finely pilose, sometimes glandular, sometimes with a ring of hairs at the base; style terete, sometimes swollen at the base; style-branches linear, truncate. *Pappus* of scabrid or barbellate bristles as long as the corolla, sometimes with small paleae as well; bristles sometimes caducous leaving the narrow paleae.

Perennial herbs or shrubs, branched or sometimes with a single stem; leaves sometimes radical, alternate, varying from lanceolate to linear and needle-like, frequently revolute, entire or remotely toothed, smooth, pustulate, or scabrid, usually woolly or tomentose beneath; heads solitary, terminal, sessile or peduncled, more rarely axillary and arranged in a spike-like manner on the branches or solitary at the end of a long scape.

Species about 40, natives of Africa, Madagascar, and Australia; 13 species recorded from South Africa extending from the Transvaal, Swaziland, Zululand, Natal, the Orange Free State, and through the coastal belt to the Cape district. (Type: *A. capensis* Ker-Gawl.)

9056 71. *ANTITHRIXIA* DC., Prodr., vol. 6, p. 277 (1837)

Heads heterogamous, many-flowered, with marginal female florets and bisexual disc florets. *Involucre-bracts* imbricate, linear-oblong, scarious and obtuse at the apex. *Receptacle* nude. *Corolla-tube* of disc-floret cylindric, 5-toothed. *Anthers* tailed. *Ovary* terete, stipitate at the base, subrostrate at the apex, glabrous; style-branches truncate. *Pappus* of rigid subscabrid bristles in 1 row, subconnate at the base.

A shrub, with the young branches cobwebby or scarcely glabrous; leaves opposite, linear, sometimes 2-nate, tomentose above; heads solitary, terminal.

Endemic; species 1, recorded from Namaqualand. (Type: *A. flavicomis* DC.)

NOTE.—I have not seen a specimen.—E. P. P.

9057 72. *HETEROLEPIS* Cass., in Bull. Soc. Philom. Paris, p. 26 (1820)

Heads heterogamous, many-flowered, with marginal female florets and bisexual fertile disc-florets. *Involucre* broadly campanulate; bracts in 1—3 rows; outermost bracts sometimes herbaceous, papillose; inner bracts oblong or linear, ciliate above, membranous. *Receptacle* nude, distinctly honeycombed. *Marginal-floret*:—*Corolla-tube* tubular, shorter than the limb, with scattered glandular hairs; limb oblong-linear, minutely 3-toothed, with a linear projection at the base. *Barren anthers* present. *Ovary* obovoid, densely villous; style linear; style-branches linear, obtuse. *Pappus* in 1 row, of subplumose bristles longer than the corolla-tube. *Disc-floret*:—*Corolla-tube* tubular below, narrowly subcampanulate above, with scattered glandular hairs; lobes 5, linear, about as long as the widened part of the tube. *Anthers* sagittate, with oblong blunt appendages. *Ovary* obovoid, densely villous; style linear, projecting far beyond the corolla-tube, swollen at the base; style-branches linear, obtuse. *Pappus* in 1 row, of subplumose bristles, longer than the corolla-tube.

Low shrubs 12—20 inches high; young branches cobwebby; leaves alternate, linear, usually revolute, mucronate, usually tomentose beneath; heads usually large, solitary, terminal, on long or short glandular peduncles.

Endemic; species 3, found in the south-western districts of the Cape Province to the Uitenhage district. (Type: *H. aliena* (Linn. f.) Druce.)

9058 73. *ARROWSMITHIA* DC., in Prodr., vol. 7, p. 254 (1838)

Heads heterogamous, many-flowered, with marginal female florets and bisexual sterile disc-florets. *Involucre* subglobose; bracts in about 7 rows oblong to linear-oblong, with a large elliptic obtuse apical appendage. *Receptacle* slightly convex, nude. *Marginal-floret*:—*Corolla-tube* tubular, shorter than the limb, villous; limb obovate-elliptic, minutely 3-toothed. *Ovary* oblong in outline, glabrous; style terete, globose at the base, seated on a beak arising from the top of the ovary; style-branches linear, obtuse. *Pappus* of caducous barbellate bristles, somewhat shorter than the corolla-tube. *Disc-floret*:—*Corolla-tube* tubular below, subcampanulate above, glandular, villous; lobes 5, short, ovate. *Anthers* linear, tailed at the base, with an ovate appendage. *Ovary* oblong in outline, glabrous; style linear, swollen at the base, seated on a beak from the top of the ovary; style-branches oblong-obovate, obtuse. *Pappus* in 1 row, of caducous barbellate bristles shorter than the corolla-tube.

Shrub 2 feet high; leaves alternate, crowded, ovate, with thickened margins, pungent, glabrous; heads medium-sized, sessile, solitary or 2—3-nate at the end of the branches.

Endemic; species 1, recorded from the Kingwilliamstown, Stockenstroom, and Queenstown districts. (Type: *A. styphelioides* DC.)

NOTE.—De Candolle refers to the receptacle as "clothed with linear-setaceous fimbriis or paleae". A careful examination of a young capitulum showed clearly that the bristles are those of a caducous pappus.—E. P. P.

9059 74. *PRINTZIA* Cass., in Dict. Sc. Nat., p. 463 (1825)

Heads heterogamous, many-flowered, with marginal female florets and bisexual fertile disc-florets. *Involucre* campanulate; bracts in 3—6 rows, lanceolate to linear, acute or subacute, ciliate above, woolly on the back. *Receptacle* slightly convex, honeycombed, nude. *Marginal-floret*:—*Corolla-tube* tubular, shorter than the limb, glabrous or sparsely glandular; limb oblong or oblong-elliptic, 3-toothed. *Ovary* oblong in outline, sometimes ribbed, glandular or glandular and pubescent; style terete; style-branches linear, obtuse.

Pappus in 1 row, of subplumose or scabrid bristles longer than the corolla-tube. *Disc-floret*:—*Corolla-tube* tubular below, widening in the upper part, glabrous; lobes 5, sometimes small, linear or lanceolate. *Anthers* linear, tailed at the base, with a lanceolate appendage. *Ovary* oblong in outline, sometimes ribbed, glandular or glandular and pubescent; style terete, thickened above, somewhat swollen at the base and seated on a beak from the top of the ovary; style-branches linear, obtuse. *Pappus* in 1 row, of subplumose or scabrid bristles as long as the corolla.

Shrubs from 9 inches to 3 feet high; leaves alternate, sessile, ovate, elliptic to linear, often toothed, tomentose or tomentose beneath; heads sessile on short axillary branchlets, solitary or 2—3 together.

Endemic; species 8, ranging from the Clanwilliam district, through the coastal area to Natal; also recorded from the Queenstown district and Basutoland. (Type: *R. bergii* Cass.)

9061 **75. INULA** Linn., *Sp. Pl.*, ed. 1, p. 881 (1753)

(*Monactinocephalus* Klatt)

Heads heterogamous, few-flowered, with marginal female florets and bisexual fertile disc-florets. *Involucre* campanulate; bracts in 4 rows, lanceolate; outer bracts herbaceous, glandular; inner bracts submembranous, glabrous. *Receptacle* nude, honeycombed, with the margins of the pits produced. *Marginal-floret*:—*Corolla-tube* cylindric, about as long as the limb, glabrous; limb oblong, 3-toothed. *Ovary* more or less obovoid, pilose; style linear, globose at the base; style-branches linear, obtuse. *Pappus* in 1 row, of scabrid bristles longer than the corolla-tube and connate at the base to form a crown on top of the ovary. *Disc-floret*:—*Corolla-tube* tubular, slightly widening upwards, glabrous; lobes 5, small, ovate. *Anthers* linear-oblong, tailed, with a lanceolate appendage. *Ovary* obovoid, pilose; style terete, globose at the base; style-branches linear, flat, obtuse. *Pappus* in 1 row, of scabrid bristles as long as the corolla and connate at the base to form a crown on top of the ovary.

Subherbaceous, up to 2½ feet high; leaves alternate, linear, entire, glandular; heads solitary, shortly peduncled, arranged axillary along the branches.

Species over 200, natives of Africa, Europe, and Asia; 1 species occurs in South Africa as a widely spread weed. (Type: *I. helenium* L.)

NOTE.—The above description only applies to the South African weed.—E. P. P.

9061a **76. PENTATRICHIA** Klatt, in *Bull. Herb. Boiss.*, vol. 3, p. 436, pl. 10 (1895)

Heads homogamous, many-flowered, with the florets all discoid and fertile. *Involucre* campanulate; bracts in 7 rows, linear, acute, scarious, glabrous. *Receptacle* flat, honeycombed, nude. *Corolla-tube* cylindric, glabrous; lobes 5, small, lanceolate. *Anthers* linear, tailed at the base, with a lanceolate appendage. *Ovary* oblong in outline, pilose; style almost filiform, with a globose swelling at the base; style-branches flat, linear, obtuse. *Pappus* in 1 row, of scabrid bristles as long as the corolla.

Shrub, 3 feet high, glandular-pilose on younger parts; leaves alternate, petioled, digitately lobed, cordate at the base, pubescent when young, becoming glabrous with age; heads solitary, peduncled, sometimes 2 together or arranged in a corymbose manner.

Endemic; species 1, found in South West Africa. (Type: *P. petrosa* Klatt)

NOTE.—Spencer Moore (*Journ. Bot.*, vol. 55, p. 106 (1917)) described a plant as *Pentatrichia alata*, but noted that there is a double pappus; that and the heterogamous heads would remove it from the genus *Pentatrichia*. Burtt-Davy (*Kew Bulletin*, p. 570 (1933)) transferred the plant to the genus *Phylrophyllum* but, as paleae are absent, it is excluded from this genus. The plant dealt with by Spencer Moore and Burtt-Davy is a species of *Pulicaria* and the new combination should be *Pulicaria alata* (Sp. Moore) Phillips.—E. P. P.

9061b 77. BOJERIA DC., in Prodr., vol. 5, p. 94 (1836)

Heads homogamous, many-flowered, discoid. *Involucre* campanulate; bracts in 5—8 rows; the outermost bracts ovate, shortly fimbriate, scabrid on the back; innermost bracts long-linear, ciliate above, or all bracts lanceolate, ciliate and pilose on the back. *Receptacle* slightly convex, honey-combed, nude. *Corolla-tube* tubular, 4-angled, glabrous or tubular and glandular below and widened above; lobes 5, small, lanceolate or ovate. *Anthers* linear, tailed at the base, with a lanceolate appendage. *Ovary* terete, ribbed, pilose; style terete, swollen at the base, sometimes thickened above; style-branches linear or oblong, obtuse. *Pappus* of many scabrid bristles as long as the corolla.

Herbaceous shrubs, sometimes up to 5 feet high; stems ribbed, glandular-pilose; leaves alternate, sessile, lanceolate or linear, sometimes distinctly auricled at the base, entire or dentate, usually glandular-pubescent; heads solitary, terminal, or in the axils of the upper leaves.

Species 5, natives of Africa and Madagascar; 2 species in South Africa, recorded from Basutoland and the northern Transvaal. (Type: *B. speciosa* DC.)

9064 78. MINUROTHAMNUS DC., in Prodr., vol. 7, p. 286 (1838)

Heads heterogamous, with female ray-florets and bisexual fertile disc-florets. *Anthers* shortly tailed at the base; style-branches spreading. *Achenes* albo-villous. *Pappus* bristles 20, in 2 rows, with the outer 10 slightly smaller.

An undershrub; leaves alternate, adpressed-tomentose beneath; heads solitary at the end of a naked branch.

Endemic; species 1, recorded from the Caledon district. (Type: *M. phagnaloides* DC.)

NOTE.—I have not seen a specimen.—E. P. P.

9065 79. IPHIONA Cass., in Bull. Soc. Philom. Paris, p. 153 (1817)

Heads homogamous, many-flowered, discoid. *Involucre* campanulate; bracts in 6 rows, lanceolate, subacuminate, ciliate, pubescent on the back. *Receptacle* flat, honeycombed, nude. *Corolla-tube* tubular, glabrous; lobes 5, lanceolate, obtuse, glandular-hairy on the back. *Anthers* linear, long-tailed at the base, with a lanceolate appendage. *Ovary* oblong-linear in outline, sometimes on a distinct short stalk, distinctly ribbed, glabrous or glandular; style terete, slightly swollen at the base; style-branches linear, obtuse. *Pappus* of many bristles in 2 rows as long as the corolla, subplumose or subbarbellate, with the bristles of the outer row connate among themselves.

Small shrubs; leaves alternate, sessile or subsessile, linear, lanceolate, elliptic, or obovate, sometimes toothed, punctate, sometimes glutinous; heads terminal and solitary or axillary and peduncled.

Described species 17, natives of Africa, the Mascarene Islands, Arabia, the Mediterranean region, and central Asia; 4 or 5 species in South Africa, recorded from South West Africa, the north-western and central districts of the Cape Province, the Orange Free State, and the karroid areas of Albany, Oudtshoorn, Montagu, and Swellendam. (Type: *I. juniperifolia* Cass.)

9067 80. CYPSELODONTIA DC., in Prodr., vol. 7, p. 286 (1838)

Heads heterogamous, with the ray-florets neuter and the disc-florets bisexual and fertile. *Involucre-bracts* in many rows, imbricate, linear. *Receptacle* honeycombed, with the margins of the pits toothed. *Anthers* sagittate at the base. *Style-branches* obtuse. *Achenes* of the ray-florets glabrous, surrounded at the base with a ring of hairs; achenes of disc-florets villous. *Pappus* of ray-florets of a few bristles; pappus of disc-florets copious.

A branched undershrub; leaves few, alternate, 1-nerved, canescent-villous beneath; heads solitary at the end of the branches.

Endemic; species 1, recorded from the Uitenhage district. (Type: *C. eckloniana* DC.)

NOTE.—I have not seen a specimen.—E. P. P.

9068 81. ANISOCHAETA DC., Prodr., vol. 5, p. 109 (1836)

Heads homogamous, several-flowered, with the florets bisexual and fertile. *Involucre* campanulate; bracts in 5 rows, lanceolate, shortly pectinate on the margins, subacute glabrous. *Receptacle* conical, nude. *Corolla-tube* tubular, slightly curved, scantily glandular; lobes 5, linear, almost as long as the tube. *Anthers* linear, tailed, with a lanceolate appendage. *Ovary* linear-oblong in outline, ribbed, glandular; style terete, slightly widened at the base; style-branches flat, linear, somewhat widened above, obtuse. *Pappus* of a few unequal linear awns, some as long as the corolla-tube, some shorter.

A scrambling herb; branches striate; leaves alternate, petioled, ovate, lobed, glabrous; heads small, arranged in a panicle.

Endemic; species 1, recorded from Natal and the Transkei. (Type: *A. mikanoides* DC.)

9069 82. CALOSTEPHANE Benth., in Hook. Ic. Pl., p. 10, pl. 1111 (1876)

Heads several-flowered, either heterogamous with marginal female florets and bisexual fertile disc-florets or homogamous with bisexual florets only. *Involucre* campanulate; bracts in 2 rows, linear, sometimes acuminate, usually ciliate, strigose or glandular on the back, herbaceous. *Receptacle* flat, nude. *Marginal-floret*:—*Corolla-tube* tubular, much shorter than the limb, glandular; limb broadly elliptic, 3-lobed. *Staminodes* 2—5. *Ovary* terete, oblong or oblong-linear in outline, ribbed, glandular, pilose; style terete, globose at the base; style-branches flat, linear, obtuse. *Pappus* in 2 rows; the outer row of 5 obovate membranous scales; inner row of 5 spathulate or linear scales alternating with those of the outer row. *Disc-floret*:—*Corolla-tube* tubular below, widening above, glandular-hairy; lobes 5, lanceolate, acute, glandular on the back. *Anthers* linear, tailed at the base, with a lanceolate appendage. *Ovary* terete, oblong-linear in outline, ribbed, pilose, glandular; style terete, subglobose at the base; style-branches linear, flat, obtuse. *Pappus* in 2 rows; the outer row of 5 obovate membranous scales; the inner row longer than the outer consisting of bristles with broad membranous wings about the middle or of 5 spathulate or obovate-spathulate membranous scales as long as the outer pappus scales.

Herbaceous; leaves alternate, sessile or produced into a petiole, decurrent on the stem, linear or lanceolate, entire or toothed, glabrous or hairy; heads solitary, on long peduncles.

An African genus of 6 species; 4 species in South Africa, recorded from South West Africa and the northern Transvaal. (Type: *C. divaricata* Bth.)

9072 83. ANISOTHRIX O. Hoffm., in O. Kuntze Rev. Gen., vol. 3, pt. 2, p. 129 (1898)

Heads homogamous, with all the florets bisexual and fertile. *Involucre* hemispherical; bracts in many rows, imbricate. *Receptacle* flat, nude. *Corolla* with a narrow cylindric 5-toothed limb. *Anthers* tailed at the base. *Style-branches* linear, obtuse. *Achenes* cylindric, truncate, silky. *Pappus*

double; the outer row of 10 short bristles; the inner row of 5 elongated bristles.

A glabrous shrub; leaves small, pinnatifid; heads large, solitary at the apex of the branches.

Endemic; species 1, recorded from the Montagu district. (Type: *A. kuntzei* O. Hoffm.)

NOTE.—I have not seen a specimen.—E. P. P.

9073 84. PEGOLETTIA Cass., in Dict. Sc. Nat., vol. 38, p. 230 (1825)

Heads homogamous, many- or several-flowered, discoid, with all or some of the florets fertile. *Involucre* broadly or narrowly campanulate; bracts in 3—4 rows, lanceolate to linear, usually acute, sometimes acuminate, often ciliate, usually glandular on the back, sometimes glabrous. *Receptacle* nude. *Corolla-tube* tubular, gradually widening upwards, glandular; lobes 5, lanceolate, glandular on the back. *Anthers* linear, tailed at the base, with a lanceolate appendage. *Ovary* terete, linear or oblong-linear in outline, ribbed, pubescent, sometimes also glandular; style terete, rarely broadly linear, swollen at the base; style-branches flat, linear, rarely linear-obovate, obtuse. *Pappus* double; the outer pappus of short paleae which are often fimbriate; the inner pappus of barbellate, rarely plumose, bristles as long as the corolla.

Woody shrub, from 6 to 18 inches high, sometimes subherbaceous annuals; leaves alternate, sessile, linear, linear-spathulate, elliptic-lanceolate, or oblanceolate, sometimes toothed, punctate, smooth or rugose, tomentose, pubescent, or glabrous; heads solitary, peduncled, terminal or axillary.

An African genus of about 12 species; 10 species in South Africa, found in South West Africa, Namaqualand, Ngamiland, Bechuanaland, the Transvaal, in many of the north-western and central districts of the Cape Province; also recorded from the Worcester and the Port Elizabeth districts. (Type: *P. senegalensis* Cass.)

9078 85. PULICARIA Gaertn., Fruct., vol. 2, p. 461, t. 173 (1791)

Heads heterogamous, many-flowered, with marginal female florets and bisexual fertile disc-florets. *Involucre* subhemispherical; bracts in 4—5 rows, linear, acute, glandular-hairy on the back. *Receptacle* flat, honeycombed, nude. *Marginal-floret*:—*Corolla-tube* cylindric, 2—3-toothed above or tubular with an oblong-linear toothed limb glandular on the back (sometimes both types of florets occur in the same head), glabrous. *Ovary* terete, linear-oblong in outline, ribbed, glabrous or scantily pubescent; style linear, slightly swollen or globose at the base; style-branches flat, linear, obtuse. *Pappus* in 2 rows; outer row of small scales forming more or less a crown on top of the ovary; inner row of a few caducous bristles about as long as the corolla-tube. *Disc-floret*:—*Corolla-tube* tubular, slightly widened upwards, glabrous; lobes 5, small, lanceolate, glandular on the back. *Anthers* linear, tailed at the base, with a lanceolate appendage. *Ovary* terete, oblong-linear in outline, faintly ribbed, scantily pubescent; style linear, globose at the base; style-branches flat, linear, obtuse, sometimes shortly 2-fid. *Pappus* in 2 rows; outer row of small scales forming more or less a crown on top of the ovary; inner row of a few caducous smooth bristles as long as the corolla.

Annual or perennial herbs, villous or subwoolly, or rarely glabrate; leaves alternate, often caudate-amplexicaul at the base, entire, undulate, or sinuate-dentate; heads medium-sized or small, rarely large, solitary, often peduncled, terminal.

Described species about 100, natives of Africa, Europe, and Asia, with a few species in the Mediterranean region; 3 species in South Africa, recorded from South West Africa, the Kimberley district, the Transvaal, Zululand, Natal, East Griqualand, and the Stutterheim and Cape districts. (Type: *P. vulgaris* Gaertn.)

- 9083 86. **PHILYROPHYLLUM** O. Hoffm., in Engler & Prantl, Pflanzenfam., vol. 4, pt. 5, p. 268 (1890)

Heads heterogamous, several-flowered, with marginal female florets and bisexual fertile disc-florets. *Involucre* campanulate; bracts in 4 rows, lanceolate, subacuminate, acute, glandular on the back; inner bracts ciliate. *Receptacle* conical, paleate; paleae long-linear, as long as the disc-florets, concave, glandular on the back, ciliate. *Marginal-floret*:—*Corolla-tube* tubular, slightly longer than the limb, sparsely glandular; limb broadly elliptic, 3-toothed. *Ovary* oblong in outline, scantily pilose; style linear, globose at the base; style-branches linear-spathulate, obtuse. *Pappus* of short narrow paleae forming a crown on top of the ovary. *Disc-floret*:—*Corolla-tube* tubular below, subcampanulate above, sparsely glandular; lobes lanceolate, with a few glands on the back. *Anthers* linear, tailed at the base, with a lanceolate appendage. *Ovary* oblong in outline, pilose; style linear, globose at the base; style-branches linear-spathulate, obtuse. *Pappus* in 2 rows; outer pappus of short narrow paleae forming a crown on top of the ovary; inner pappus of a few caducous barbellate bristles as long as the corolla.

A glandular herb up to 18 inches high; leaves alternate, petioled, ovate, cordate at the base, toothed, scantily pubescent, especially along the nerves; heads small, often arranged in corymbose cymes.

Endemic; species 1, recorded from Bechuanaland and the Transvaal. (Type: *P. schinzii* O. Hoffm.)

- 9088 87. **EENIA** Hiern & Sp. Moore, in Journ. Bot., vol. 37, p. 373 (1899)

Heads homogamous, several-flowered, discoid, with the florets bisexual and fertile. *Involucre* campanulate; bracts in 3 rows, oblong, obtuse, veined, chartaceous. *Receptacle* elevated, paleate; paleae linear, deeply concave, 1-nerved, somewhat shorter than the floret. *Corolla-tube* tubular, widened above, glandular; lobes ovate, glandular on the back. *Anthers* linear, sagittate at the base, with a lanceolate appendage. *Ovary* somewhat ovoid, shortly pilose; style terete; style-branches linear, obtuse. *Pappus* in 1 row, consisting of 5 fimbriate scales alternating with 5 short bristles as long as the scales.

A herbaceous plant, with striate, scantily woolly stems; leaves alternate, shortly petioled, digitately 3-lobed, with the lobes linear and lobed, minutely punctate beneath, sometimes subwoolly beneath; heads small, arranged in a lax corymb.

Endemic; species 1, recorded from South West Africa. (Type: *E. damarensis* Hiern & Sp. Moore)

NOTE.—I have not seen the type specimen, but a specimen in the National Herbarium (Liebenberg 4761) agrees well with the description and is probably the same species, though the 5 short bristles which alternate with the pappus scales are not mentioned by Hiern and Spencer Moore.—E. P. P.

- 9089 88. **ONDETIA** Benth., in Hook. Ic. Pl., pl. 1112, p. 11 (1876)

Heads heterogamous many-flowered, with marginal female florets and bisexual fertile disc-florets. *Involucre* campanulate; bracts in 7 rows, oblong, with wide membranous margins and a large ovate membranous apex ending in a long awn. *Receptacle* flat, paleate; paleae variously shaped, lanceolate or oblong in general outline, often winged and deeply lobed, often acuminate, shorter than the disc-florets. *Marginal-floret*:—*Corolla-tube* tubular, about as long as the limb, glabrous; limb elliptic, minutely 3-toothed. *Ovary* oblong in outline, villous; style terete; style-branches linear, obtuse. *Pappus* of unequal linear barbellate bristles shorter than the corolla-tube.

Disc-floret.—*Corolla-tube* tubular, somewhat narrowing upwards; lobes almost as long as the tube, lanceolate, acute, glandular on the back. *Anthers* tailed at the base, with a lanceolate appendage; tails with a few long glandular hairs; filaments thick, terete, becoming suddenly constricted below the anthers and then narrow-linear. *Ovary* oblong in outline, villous; style terete; style-branches linear, obtuse. *Pappus* of unequal linear barbellate bristles shorter than the corolla-tube.

An erect or semi-erect glabrous herb from 9 inches to 3 feet high; leaves alternate, sessile, linear, prominently decurrent on the branches, glabrous; heads medium-sized, solitary, sessile, terminating short branchlets, overtopped by a few leaves.

Endemic; species 1, recorded from South West Africa. (Type: *O. linearis* Bth.)

9090 89. GEIGERIA Griesselich in Linnaea, vol. 5, p. 411 (1830)

Heads heterogamous, few- to several-flowered, with marginal female florets and bisexual fertile disc-florets. *Involucre* usually ovoid; bracts in 4—6 rows, ovate to lanceolate, glabrous or sometimes glandular; outer bracts usually with foliaceous appendages. *Receptacle* usually convex, sometimes conical, usually densely setose, sometimes paleate; paleae (when present) shorter than the disc-florets, chartaceous, irregularly cut above. *Marginal-floret*.—*Corolla-tube* usually shorter than the limb, glabrous or sometimes glandular; limb oblong or linear-oblong, minutely 3-toothed or evidently 3-lobed, occasionally 4-lobed. *Ovary* oblong in outline, villous; style terete; style-branches linear, obtuse. *Pappus* usually of 10 broad paleae (rarely more), with the alternate paleae awned, more rarely of a crown of narrow-linear paleae. *Disc-floret*.—*Corolla-tube* tubular and slightly narrowing upwards, sometimes tubular below and widened above, glabrous, more rarely glandular; lobes lanceolate-linear, about $\frac{1}{2}$ as long as the tube, sparsely glandular on the back. *Anthers* linear, tailed at the base, sometimes with a few long glandular hairs on the tails, with a lanceolate appendage. *Ovary* oblong in outline, villous; style terete, slightly swollen at the base; style-branches linear, obtuse. *Pappus* usually of 10 broad scales (rarely more), sometimes with the alternate paleae awned, more rarely of a crown of narrow-linear paleae.

Acaulescent shrubs or erect and up to 2 feet high; leaves alternate, sessile, usually crowded, more rarely scattered, sometimes short-linear, more rarely oblong or elliptic, rarely toothed, sometimes spinescent at the apex, rarely much decurrent on the branches, glabrous, scabrid, rarely woolly; heads sessile, solitary or few in a cluster, terminal or axillary.

An African genus of 50 described species; 36 species recorded from South Africa, widely spread from South West Africa, Bechuanaland, the north-western districts of the Cape Province, the Transvaal, Basutoland, Natal, and the Orange Free State. (Type: *G. africana* Griessel.)

9094 90. CALLILEPIS DC., in Prodr., vol. 5, p. 671 (1836)

Heads heterogamous, many-flowered, with marginal female florets and bisexual fertile disc-florets. *Involucre* campanulate; bracts in 3 rows, lanceolate-linear, acuminate, glabrous. *Receptacle* paleate; paleae boat-shaped, long or shortly beaked, sometimes keeled and glandular-hairy on the keel and fimbriate on the margin. *Marginal-floret*.—*Corolla-tube* tubular, very much shorter than the limb, glabrous; limb long-oblong-linear or broadly elliptic, 3-toothed. *Ovary* 3-angled or 3-winged, produced into 3 beaks, glabrous; beaks usually channelled, keeled, glandular, hairy on the margins and keel; style terete; style-branches linear, obtuse. *Pappus* of a few

membranous fimbriated paleae. *Disc-floret*:—*Corolla-tube* tubular below, campanulate or subcampanulate above, glabrous; lobes lanceolate, about $\frac{1}{3}$ to $\frac{1}{2}$ as long as the tube. *Anthers* linear, tailed at the base, with the tails hairy, with a lanceolate appendage. *Ovary* compressed, obovate, with the margins produced into 2 beaks, glabrous; beaks usually channelled, keeled and glandular hairy on the margins and keels; style terete; style-branches linear, obtuse. *Pappus* of membranous more or less fimbriated scales.

Herbs 1—2 feet high, with the stems from a large woody rootstock; leaves alternate, sessile, narrow-linear, linear-lanceolate, lanceolate or elliptic, glabrous; heads solitary at the end of a long peduncle; rays white.

Endemic; species 6, recorded from the Transvaal, Swaziland, Zululand, Natal, Griqualand East, and Pondoland. (Type: *C. laureola* DC.)

9096 91. ANISOPAPPUS Hook. & Arn., Bot. Beechey's Voy., p. 196 (1836)

Heads heterogamous, several-flowered, with marginal female florets and bisexual fertile disc-florets. *Involucre* campanulate; bracts in 4—5 rows, lanceolate, ciliate, glabrescent or villous on the back. *Receptacle* flat, paleate; paleae linear, as long as the disc-florets, ciliate. *Marginal-floret*:—*Corolla-tube* tubular, shorter than or about as long as the limb, glabrous or glandular; limb oblong or elliptic, 3-toothed. *Ovary* ellipsoid or oblong-linear in outline, somewhat ribbed, with a few glandular hairs on all or some of the ribs; style terete; style-branches flat, linear, obtuse. *Pappus* of narrow-linear or broader and fimbriated paleae, shorter than the ovary. *Disc-floret*:—*Corolla-tube* tubular, gradually widening upwards, sparsely glandular; lobes 5, small, ovate, with a few glands on the back. *Anthers* linear, tailed at the base, with a lanceolate appendage. *Ovary* ellipsoid, or linear-obovate in outline, ribbed, with glandular hairs on all or some of the ribs; style terete; style-branches flat, linear, obtuse. *Pappus* of narrow-linear or broader and fimbriated paleae, shorter than the ovary.

Herbaceous shrubs; stems tomentose; leaves alternate, petioled, ovate-lanceolate or lanceolate, usually toothed, tomentose beneath; heads medium-sized, arranged in a terminal corymb, with the corymb of many or few heads.

Species 17, all except one found in China and Africa; 3 species in South Africa recorded from South West Africa and the Transvaal. (Type: *A. chinensis* Hook. et Arn.)

NOTE.—The plant described by Klatt (*Bull. Herb. Boiss.*, vol. 3, p. 437 (1895)), from South West Africa as *Matricaria pinnatifolia* is, according to Hutchinson (*Kew Bulletin*, p. 115 (1917)), a species of *Anisopappus*.—E. P. P.

9098 92. OSMITOPSIS Cass., in Bull. Soc. Philom. Paris, p. 154 (1817)

Heads heterogamous, few- to many-flowered, with neuter marginal-florets and the outer bisexual florets fertile and the inner sterile. *Involucre* campanulate; bracts in 2—4 rows, ovate-elliptic, sometimes glandular on the back, sometimes fimbriated above. *Receptacle* slightly convex, paleate; paleae as long as the disc-florets, caducous, linear to lanceolate, sometimes fimbriated, membranous. *Marginal-floret*:—*Corolla-tube* tubular, shorter than the limb, glandular and pilose or glabrous; limb linear, oblong-linear, or elliptic, entire or bifid at the apex. *Ovary* none or abortive; style and style-branches none or abortive. *Pappus* none. *Disc-floret*:—*Corolla-tube* tubular, widening in the upper part, glandular or glabrous; lobes 5, small, ovate, obtuse, sometimes glandular on the back. *Anthers* linear, tailed at the base, with an oblong obtuse appendage. *Ovary* oblong in outline, somewhat ribbed, glandular or glabrous; style terete; style-branches linear. truncate. *Pappus* none.

Dwarf plants or bushes up to 3 feet high, with the branches sometimes tomentose; leaves alternate, sessile, sometimes reflexed, linear, linear-lanceolate, or spathulate, entire or remotely toothed, sometimes rigidly ciliate, sometimes punctate, tomentose or glabrous; heads solitary, terminal, or a few heads arranged in a corymb.

Endemic; species 4, confined to the south-western districts of the Cape Province. (Type: *O. asteriscoides* (L.) Cass.)

9099

93. OSMITES Linn., Pl. Rar. Afr., p. 24 (1760)

Heads heterogamous, many-flowered, with marginal female florets and bisexual fertile disc-florets. *Involucre* campanulate; bracts in 3 rows, linear, oblong, lanceolate, or obovate, with membranous fimbriated, sometimes toothed margins. *Receptacle* convex or conical, paleate; paleae linear, lanceolate, or oblong-elliptic, concave or nearly flat, sometimes mucronate. *Marginal-floret*:—*Corolla-tube* tubular, much shorter than the limb, glabrous; limb elliptic-oblong, bifid or 3-toothed at the apex. *Ovary* oblong in outline, sometimes 3-angled, glandular; style terete, sometimes undivided; style-branches linear, obtuse. *Pappus* of a few membranous paleae shorter than the ovary, or of 2 linear paleae as long as the corolla-tube, sometimes pappus minute. *Disc-floret*:—*Corolla-tube* tubular, widening or scarcely widening above, glabrous; lobes 5, small, ovate, obtuse, with a few glands on the back. *Antthers* tailed, with an oblong obtuse appendage. *Ovary* oblong in outline, sometimes 3-angled, glandular; style terete, sometimes globose at the base, sometimes undivided; style-branches linear, truncate. *Pappus* of membranous paleae shorter than the ovary or of linear paleae 2—3 of which are as long as the corolla-tube.

Shrubs, branched or unbranched; leaves alternate, sessile, linear, elliptic, or lanceolate, entire or toothed or digitately lobed, glabrous, strigose, or tomentose; heads peduncled, solitary, terminal, sometimes arranged in a corymb; rays white.

Endemic; species 8, distributed from the Clanwilliam district through the south-western districts to the Mossel Bay district. (Type: *O. bellidiastrum* L.)

9130

94. ACANTHOSPERMUM Schrank, Pl. Rar. Horti Monac., t. 53 (1819)

Heads heterogamous, few-flowered, with 5 marginal female florets in one row and bisexual disc-florets. *Bracts* in 2 rows. *Receptacle* somewhat conical, paleate; paleae obovate-spathulate, as long as the corolla-tube of the disc-florets, fimbriated on the margins, membranous. *Marginal-floret*:—*Corolla* shorter than the ovary, usually concave and 3-toothed. *Ovary* completely enclosed in a bract, somewhat ellipsoid; style terete; style-branches linear, obtuse; bract with 5—7 longitudinal rows of hooked spines, glandular. *Achenes* ellipsoid, with hooked spines. *Pappus* none. *Disc-floret*:—*Corolla-tube* tubular below, campanulate above, shortly glandular-pilose; lobes 5, as long as the campanulate part of the corolla, reflexed, ovate, with a few glands on the back. *Antthers* minutely eared at the base, linear, with an oblong or ovate obtuse appendage. *Ovary* linear in outline, beaked, glabrous; style linear, somewhat clavate above, minutely bifid, glandular. *Pappus* none.

Diffuse annual herbs, often prostrate, scabrid-pubescent or glabrous; leaves opposite, shortly petioled, obovate, toothed, rarely incised; heads small, subsessile in pairs at the apex of branches or subsessile in the axils of the leaves.

Species 4, natives of tropical America and the Galapagos Islands; 2 species in South Africa as naturalized weeds and found in the Transvaal, Natal, and the Orange Free State. (Type: *A. brasiliun* Schrank)

9146 95. AMBROSIA Linn., Sp. Pl., ed. 1, p. 987 (1753)

Plants monoecious. *Male head*:—*Involute* basin-shaped, herbaceous, enclosing 4 bisexual sterile florets. *Receptacle* with linear flaccid scales longer than the corolla. *Corolla* ovoid, glandular; lobes half as long as the corolla, ovate, glandular on the back. *Anthers* free, oblong, obtuse, with an acuminate reflexed appendage. *Ovary* abortive; style about half the length of the corolla, undivided, truncate, penicillate. *Pappus* none. *Female head*:—*Involute* of 4–5 elliptic or lanceolate ciliate herbaceous bracts enclosing 2 florets. *Floret* enclosed in a beaked pilose bract with 5 protuberances. *Corolla* none. *Ovary* obovoid; style enclosed in the beak of the bract, minutely 2-fid. *Pappus* none.

Herbs up to 3 feet high; leaves alternate or opposite, entire, lobed, incised, or pinnately dissected once or twice or three times; male heads small, sessile or shortly peduncled, nodding, arranged in simple leafless spikes or racemes at the apex of the branches; female heads sessile and solitary in the axils of the upper leaves or glomerate.

Many species described but scarcely more than 12 may be regarded as specifically distinct, mostly natives of America; one species occurs in South Africa as a naturalised weed and is widely distributed. (Type: *A. maritima* L.)

9148 96. XANTHIUM Linn., Sp. Pl., ed. 1, p. 987 (1753)

Plants monoecious. *Male head*:—*Involute* short, of a few narrow bracts in 1–2 rows, enclosing many bisexual sterile florets. *Receptacle* cylindric, paleate; paleae cuneate or linear-spathulate, hyaline. *Corolla* with a widened 5-toothed limb. *Filaments* monadelphous from the base of the corolla; anthers free, obtuse at base. *Ovary* rudimentary; style undivided, subdilated at the apex. *Pappus* none. *Female head*:—*Involute* gamophyllous, closed, ovoid, furnished with sharp hooks, 2-beaked at the apex, enclosing 2 florets, often with 2–3 small outer bracts. *Corolla* none. *Style* enclosed in the beak of the involucre. *Pappus* none.

Annual herbs, scabro-pubescent or glabrous, armed with trifid spines or unarmed; leaves alternate, often petioled, variously lobed, sometimes tomentose beneath; heads axillary and solitary or glomerate; male heads at the apex of the branches; female heads below the male heads.

Species about 30, natives of North America and Europe; 4 species occur as naturalized weeds in South Africa and widely distributed. (Type: *X. strumarium* L.)

9155 97. ZINNIA Linn., Syst., ed. 10, p. 1221 (1759)

Heads heterogamous, several- to many-flowered, with marginal female florets and bisexual fertile and sterile disc-florets. *Involute* broadly or narrowly campanulate or subcylindric; bracts in 3 to many rows, oblong-elliptic, sometimes membranous on the margins at the apex, obtuse. *Receptacle* conical or at length cylindric, paleate; paleae broadly linear, concave, longer than the disc-florets. *Marginal-floret*:—*Corolla* ligulate or often attenuated into a short tube; limb obovate-elliptic, often veined, entire or bifid at the apex. *Ovary* linear-lanceolate, about as long as the corolla, ribbed, keeled on the face, pubescent above; style terete; style-branches linear, obtuse. *Pappus* none. *Disc-floret*:—*Corolla-tube* cylindric, slightly dilated below, glabrous; lobes 5, small, linear, glandular-hairy on the back. *Anthers* entire at the base. *Ovary* linear-lanceolate, much longer than the corolla, ribbed, glabrous, produced into a stout barbellate awn. *Pappus* none.

Annual, perennial herbs, or shrubs; leaves opposite, sessile, oblong-elliptic, entire, glabrous; heads medium-sized to large, pedunculate, solitary or in pairs; peduncle often thickened below the head.

Species about 20, mostly natives of Mexico; 1 species naturalized in South Africa and widely distributed. (Type: *Z. peruviana* (L.) L.)

9160 **98. SIEGESBECKIA** Linn., Sp. Pl., ed. 1, p. 900 (1753)

Heads heterogamous, few-flowered, with marginal female florets and bisexual fertile disc-florets. *Involucre* campanulate or hemispherical; bracts in 1—2 rows, elliptic, herbaceous, with stalked glands; inner bracts wrapped round the marginal-florets. *Receptacle* subconical, paleate; paleae deeply boat-shaped, veined, membranous, as long as the disc-florets, sparsely glandular. *Marginal-floret*:—*Corolla* campanulate, 5-lobed, much shorter than the ovary, glandular on the tubular portion. *Staminodes* present. *Ovary* more or less obovate in outline, keeled on the face, glabrous; style terete, somewhat globose at the base; style-branches oblong, obtuse. *Pappus* none. *Disc-floret*:—*Corolla* campanulate, 5-lobed, much shorter than the ovary, glandular on the tubular portion. *Anthers* oblong, faintly eared at the base, with an oblong obtuse appendage. *Ovary* more or less obovate, glabrous; style terete, slightly swollen at the base; style-branches oblong, obtuse. *Pappus* none.

Herbs, often annual, more or less glandular-pilose; leaves opposite, petioled, ovate to lanceolate, toothed, pubescent; heads small, arranged in lax leafy panicles.

Species 13, widely spread; 1 species naturalized in South Africa and generally distributed. (Type: *S. orientalis* L.)

9166 **99. ECLIPTA** Linn., Mant., vol. 2, p. 157 (1771)

Heads heterogamous, few-flowered, with the marginal florets female or neuter and bisexual fertile disc-florets. *Receptacle* flat, convex, or shortly conical, paleate; paleae longer than the florets, boat-shaped, ribbed, subacuminate, keeled, ciliate on the margins and keel. *Marginal-floret*:—*Corolla-tube* somewhat compressed, much shorter than the limb, glabrous; limb oblong-elliptic, truncate, entire or 2—3-toothed, ciliate above, glandular-pilose on the back at the base. *Ovary* (in the South African plant) abortive, oblong in outline, 3-angled, glandular-hairy above; style none. *Pappus* a ring of delicate hairs. *Disc-floret*:—*Corolla-tube* tubular, widened above, glabrous; lobes 5, about $\frac{1}{4}$ as long as the tube, lanceolate, glandular. *Anthers* linear, shortly eared at the base, with an ovate appendage. *Ovary* campanulate, oblong in outline, glandular-hairy above; style terete, subglobose at the base; style-branches linear, subacute, densely glandular. *Pappus* a ring of fine minute hairs.

Annual or perennial herbs, more or less strigose-pubescent or hirsute; leaves opposite, sessile or shortly petioled, long lanceolate-linear, entire or remotely toothed, strigose; heads small, pedunculate, solitary or in groups of 2 or more at the end of the branches, sometimes axillary.

Species 3—4, common in all warm regions; 1 species naturalized in South Africa, widely distributed. (Type: *E. erecta* L. (*E. alba* (L.) Hassk.)

9169 **100. SCLEROCARPUS** Jacq., Icon., Pl. Rar., vol. 2, p. 17, t. 176 (1782)

Heads heterogamous, few-flowered, with marginal neuter florets and bisexual fertile disc-florets. *Involucre* campanulate; bracts in 1 row, leafy. *Receptacle* convex, paleate; paleae plano-convex in outline, ribbed, sparsely pilose. *Marginal-floret*:—*Corolla-tube* longer than the limb, cylindric, sparsely glandular-hairy; limb obovate, shortly bilobed. *Ovary* linear, glabrous;

style none. *Pappus* none. *Disc-floret*:—*Corolla-tube* tubular, slightly widening upwards, glabrous; lobes 5, small, linear, sparsely pilose on the back. *Anthers* minutely and bluntly sagittate at the base, with a linear appendage. *Ovary* completely enclosed in the paleae, about as long as the corolla, obovate, sometimes oblique above, glabrous; style terete; style-branches linear, obtuse. *Pappus* none.

Herbs, with the branches striate and sparsely pilose; leaves alternate, shortly petioled, ovate or lanceolate, entire or remotely toothed, strigose beneath; heads solitary, peduncled, terminal.

Described species 9, natives of Africa, North and South America; 1 species recorded from South West Africa. (Type: *S. africanus* Jacq.)

9190 **101. BLAINVILLEA** Cass., Dict. Sc. Nat., vol. 29, p. 493 (1825)

Heads heterogamous, few-flowered, with marginal florets female and bisexual fertile disc-florets. *Involucre* ovoid-campanulate or subglobose; bracts in more than 1 row. *Receptacle* somewhat convex, paleate; paleae as long as the florets, elliptic, concave, irregularly toothed above, glandular on the back, membranous. *Marginal-floret*:—*Corolla-tube* cylindric, much longer than the limb, glabrous; limb obovate, shortly bifid. *Ovary* slightly longer than the corolla, 3-angled, flat on the back, keeled on the face, shortly beaked, glabrous; style terete; style-branches linear, obtuse. *Pappus* of 3 barbellate awns, about as long as the ovary. *Disc-floret*:—*Corolla-tube* cylindric, campanulate above, glabrous; lobes 5, about $\frac{1}{2}$ as long as the campanulate part, ovate, sparsely glandular on the back. *Anthers* oblong-linear, faintly eared at the base, with an ovate appendage. *Ovary* about as long as the corolla, linear-oblong in outline, shortly beaked, pilose above; style terete, swollen at the base; style-branches linear, obtuse. *Pappus* of 2 barbellate awns about as long as the ovary, and a few short linear paleae.

Slender, erect subherbaceous bush, with striate glabrescent branches; leaves opposite, shortly petioled, elliptic to lanceolate, entire, or remotely toothed, scantily pubescent; heads small, peduncled, arranged in a paniculate manner at the ends of the branches.

Species 14, natives of Africa, South America, and the Galapagos Islands; 1 species recorded from the northern Transvaal. (Type: *B. gayana* Cass.)

9192 **102. WEDELIA** Jacq., Enum. Pl. Carib., p. 8 (1760)

Heads heterogamous, many-flowered, with the marginal florets female and the disc-florets bisexual and fertile. *Involucre* campanulate; bracts in 2 rows, elliptic and obovate-elliptic, pilose on the back, herbaceous. *Receptacle* paleate; paleae somewhat shorter than the corolla, lanceolate in outline, deeply boat-shaped, with a winged keel and a lanceolate terminal appendage. *Marginal-floret*:—*Corolla-tube* cylindric, much shorter than the limb, glabrous; limb elliptic, 3-toothed. *Ovary* somewhat compressed, oblong in outline, pubescent; style filiform below, slightly thickening above, undivided, obtuse. *Pappus* of 2 awns as long as the ovary and a ring of short unequal paleae. *Disc-floret*:—*Corolla-tube* tubular below, subcampanulate above, glabrous; lobes 5, small, ovate, glandular-ciliate. *Anthers* linear, truncate at the base, with an ovate appendage. *Ovary* oblong-linear in outline, shortly pilose; style linear, slightly swollen at the base; style-branches linear, obtuse, glandular ciliate. *Pappus* of 2 subherbaceous awns, slightly longer than the ovary and a crown of short unequal paleae.

Subherbaceous shrubs 1—3 feet high; leaves opposite, subsessile, ovate, elliptic, or lanceolate, remotely toothed, strigose; heads usually peduncled, solitary and terminal; rays yellow.

Described species about 150, natives of Africa, Asia and South America; 3 species recorded from South Africa, found in the Northern Transvaal, Zululand, and Natal. (Type: *W. fruticosa* Jacq.)

1915 103. ASPILIA Thou., Gen. Nov. Madagascar, p. 12 (1806)

Heads heterogamous, many-flowered, with marginal neuter florets and bisexual fertile disc-florets. *Involucre* campanulate; bracts in 3 rows, oblong-lanceolate, ciliate, strigose, herbaceous. *Receptacle* paleate; paleae elliptic when flattened, as long as and enfolding the floret, with a linear appendage. *Marginal-floret*:—*Corolla-tube* tubular, much shorter than the limb, glabrous; limb elliptic, divided almost half-way down into usually 2, occasionally 3, lobes. *Ovary* and *style* none. *Disc-floret*:—*Corolla-tube* tubular below, narrowly campanulate above, glabrous; lobes 5, small, ovate, glandular on the back. *Anthers* linear, truncate and faintly eared at the base, with an ovate appendage. *Ovary* biconvex, oblong-linear in outline, beaked, pilose; style linear; style-branches linear, subacute, glandular on the back. *Pappus* a ring of fimbriated paleae much shorter than the ovary.

Herbaceous shrubs up to 3 feet tall, scabrid, hispid, or glandular, often with striate stems; leaves opposite, linear to ovate, entire or remotely toothed, scabrid or pubescent, sometimes pustulate on the upper surface; heads peduncled, solitary, terminal, sometimes corymbosely arranged.

Described species 140, natives of Africa, Madagascar, and South America; 1 species in South Africa recorded from the northern Transvaal.

1916 104. TITHONIA Desf., ex Juss. Gen., p. 189 (1789)

Heads heterogamous, many-flowered, with the marginal florets neuter and the disc-florets bisexual and fertile. *Involucre* campanulate; bracts in 2 rows, oblong, rigid, ribbed, glabrous. *Receptacle* conical, paleate; paleae about as long as the disc-florets, more or less oblanceolate in profile, boat-shaped, acuminate, striate. *Marginal-floret*:—*Corolla-tube* somewhat compressed, linear-oblong, much shorter than the limb, glabrous; limb long-lanceolate, 3-toothed. *Ovary* and *style* none. *Disc-floret*:—*Corolla-tube* tubular, somewhat swollen below, pubescent; lobes 5, lanceolate. *Anthers* linear, faintly eared at the base, with a lanceolate appendage. *Ovary* linear-obovate, compressed, keeled on the face, glabrous; style terete, globose at the base; style-branches linear, acute. *Pappus* of 2 awns almost as long as the ovary and fimbriated paleae about $\frac{1}{2}$ as long as the awns.

Robust herbs up to 7 feet high; leaves alternate, petioled, deeply digitately lobed, tomentose beneath, pustulate on the upper surface; heads large, peduncled, terminal and axillary, sometimes arranged in a corymbose manner.

A South American genus of 17 described species; 1 species has become naturalized in Natal. (*T. tagetiflora* Desf.)

19204 105. MELANTHERA Rohr, in Skrivt. Naturh. Selsk. Kjoebenhavn, vol. 2, p. 213 (1792)

Heads heterogamous, many-flowered, with the marginal-florets female or neuter and the disc-floret bisexual and fertile. *Involucre* campanulate; bracts in 1—3 rows, oblong, bluntly mucronate, pilose or setose on the back; the outer more or less herbaceous. *Receptacle* slightly convex, paleate; paleae about $\frac{3}{4}$ or almost as long as the disc-floret and enwrapping it, linear-oblong in profile, boat-shaped, keeled, winged or ciliate on the keel, sometimes ciliate above, sometimes shortly acuminate and ribbed. *Marginal-floret*:—*Corolla-tube* somewhat compressed, very much shorter than the limb, sparsely pilose or glabrous; limb elliptic, 2-keeled, 2—3-toothed. *Ovary*

about as long as the corolla-tube, somewhat compressed, oblong or linear in outline, sometimes keeled on the face or with narrow marginal wings; style (when present) linear; style-branches linear, obtuse. *Pappus* of 3 linear subcaducous awns about as long as the ovary, with a rim of minute paleae. *Disc-floret*:—*Corolla-tube* tubular below, then suddenly widened, glabrous; lobes 5, ovate, glandular on the margins. *Anthers* linear, shortly sagittate at the base with an ovate appendage. *Ovary* oblong in outline, glandular-hairy above, otherwise glabrous; style linear, swollen at the base; style-branches linear, apiculate and glandular-pilose. *Pappus* of 2 subcaducous awns, longer or shorter than the ovary and a crown of minute paleae.

Herbaceous plants, sometimes up to 4—5 feet high; leaves opposite, petioled, ovate, long-lanceolate, or long-linear, sometimes hastate at the base, distinctly or minutely or remotely toothed, pustulate and pubescent on upper surface; heads solitary, peduncled, terminal and axillary.

Described species 55, natives of Africa, Madagascar, India, and America; 3 species recorded from South Africa and found in South West Africa, Ngamiland, the Transvaal, Zululand, Natal, through Pondoland to the Komgha district.

9207 106. SPILANTHES Jacq., Enum. Pl. Carib., p. 8 (1760)

Heads heterogamous, many-flowered, with marginal female florets and bisexual fertile disc-florets. *Involucre* more or less flattened; bracts in 1 row, linear to lanceolate, glabrous. *Receptacle* conical or almost cylindric, projecting beyond the bracts, paleate; paleae as long as the disc-florets, linear to lanceolate in profile, somewhat curved, boat-shaped, enveloping the florets; paleae of marginal-floret shorter than the corolla. *Marginal-floret*:—*Corolla-tube* slightly shorter than the limb, more or less hairy; limb elliptic, usually 2-lobed. *Ovary* longer than the corolla-tube, obovate-oblong in outline, 3-angled, glabrous; style filiform, swollen at the base; style-branches linear, obtuse. *Pappus* none. *Disc-floret*:—*Corolla-tube* campanulate, glabrous; lobes 5, ovate, glandular on the margins. *Anthers* free, oblong, shortly eared at the base, with a lanceolate appendage. *Ovary* longer than the corolla, 3-angled, glabrous; style terete, swollen at the base; style-branches linear, obtuse. *Pappus* none. *Achenes* black.

Herbaceous plants often found in damp places, often prostrate and rooting at the nodes; leaves opposite, petioled or sessile, ovate or linear, glabrous; heads peduncled, terminal or axillary; peduncle sometimes very long.

Described species between 80 and 90, mostly native to South America; a few in Africa; 3 species occur in South Africa and are recorded from the northern Transvaal, Natal and the Komgha and East London districts. (Type: *S. insipida* Jacq.)

9218 107. VERBESINA Linn., Sp. Pl., ed. 1, p. 901 (1753)

Heads heterogamous, many-flowered, with marginal female florets and bisexual fertile disc-florets. *Involucre* campanulate; bracts in 2 rows, lanceolate, strigose on the back, herbaceous. *Receptacle* flat, paleate; paleae as long as the ovary, lanceolate in profile, boat-shaped, acuminate, keeled, ciliate on the keel and pilose above. *Marginal-floret*:—*Corolla-tube* tubular, very much shorter than the limb, pilose; limb broadly linear, obtuse. *Ovary* ovoid, slightly longer than the corolla-tube, covered with large irregular tubercles, glabrous; style terete, globose at the base; style-branches linear, acute. *Pappus* none. *Disc-floret*:—*Corolla-tube* tubular and pilose below, widened above; lobes 5, ovate, glandular on the face. *Anthers* linear, faintly eared at the base, with a lanceolate appendage. *Ovary* obovate in outline, keeled on each face, with a broad ciliate wing deeply lobed above, strigose; style terete, globose at the base; style-branches linear, contracted at the apex into a linear glandular appendage. *Pappus* of 2 awns, shorter than the ovary.

An annual herb, 1—2 feet high, with ribbed and pilose branches; leaves alternate, petioled, ovate, deeply toothed, pubescent on upper surface, densely albo-tomentose beneath; heads peduncled, terminal and axillary, usually arranged in a corymbose manner.

Described species about 270, nearly all natives of South America; 1 species naturalized in South Africa and recorded from South West Africa, the northern Transvaal, the Prieska, Cradock and Albany districts. (Type: *V. alata* Linn.)

9232 108. CHRYSANTHELLUM L. C. Rich. in Persoon Synops., vol. 2, p. 471 (1807)

Head heterogamous, few-flowered, with marginal female florets and bisexual fertile disc-florets. *Involucre* campanulate; bracts in 1 row, oblong or oblong-ovate, glabrous. *Receptacle* small, paleate; paleae as long as the disc-florets, lanceolate-linear, 3-nerved. *Marginal-floret*:—*Corolla-tube* tubular, slightly shorter than the limb, sparsely pilose; limb obovate. *Ovary* about as long as the corolla-tube, oblong in outline, pilose; style linear, slightly swollen at the base; style branches oblong, obtuse. *Pappus* none. *Disc-floret*:—*Corolla* tubular, glabrous; lobes 5, ovate. *Anthers* oblong, very shortly eared at the base, with an oblong, obtuse appendage. *Ovary* almost as long as the corolla, obovate in outline, pilose; style terete, slightly swollen at the base; style-branches linear, subacute. *Pappus* none. *Achene* oblong-ovate, keeled on face, convex on the back, with a thick pale marginal wing, glabrous.

Annual herbs from 6 to 18 inches high; leaves often radical; cauline leaves alternate, petioled, dissected, glabrous; heads small, peduncled, terminal and axillary.

Species 9, found in most warm countries; 1 species in South Africa, recorded from South West Africa and Barkly West. (Type: *C. procumbens* L. C. Rich. = *C. americanum* (L.) Vathek)

9237 109. BIDENS Linn., Sp. Pl., ed. 1, p. 831 (1753)

Heads homogamous or heterogamous, few-flowered, with the marginal florets (when present) neuter and the disc-florets bisexual and fertile. *Involucre* campanulate; bracts in 1—2 rows; the outer (when present) linear, glandular-pilose, sometimes with long glandular hairs at the base, herbaceous; inner oblong, scarious and veined. *Receptacle* flat, paleate; paleae almost as long as or slightly longer than the disc-florets, linear or lanceolate, with membranous margins, usually veined, sometimes keeled and scabrid on the keel. *Marginal-floret*:—*Corolla-tube* cylindric or tubular, shorter than the limb, glabrous; limb elliptic, 3-toothed. *Ovary* oblong in outline, scantily glandular-pilose; style abortive or none. *Pappus* none. *Disc-floret*:—*Corolla-tube* cylindric below and tubular above or tubular and widening upwards, sometimes angled; lobes 5, small, glandular on the back. *Anthers* linear, minutely eared at the base, with an ovate appendage. *Ovary* longer or much shorter than the corolla, linear, oblong, or oblong-linear, glabrous or pubescent; style terete; style-branches linear, acute, glandular-pilose on the back. *Pappus* of 3—4 awns, longer or slightly shorter than the ovary; awns armed with retrorse bristles. *Achenes* linear, ribbed, pustulate, more or less 4-angled, scabrid; awns 3—4, with retrorse bristles, shorter than the achene.

Annual or perennial herbs; leaves opposite, petioled, simple or pinnately compound, often pinnately divided; leaflets or lobes usually acuminate, toothed, glabrescent; heads peduncled, solitary or in pairs at the apex of the branches.

Described species over 200, widely dispersed; 4 species recorded as naturalized weeds in South Africa, generally distributed. (Type: *B. tripartita* L.)

9246 110. *GALINSOGA* Ruiz et Pav., Fl. Peruv. at Chil. Prodr., p. 110, t. 24 (1794)

Heads heterogamous, several-flowered, with female marginal florets and bisexual fertile disc-florets. *Involucre* campanulate; bracts in 1 row, ovate, herbaceous, glabrous. *Receptacle* shortly conical, paleate; paleae almost as long as the disc-florets, linear or ovate in outline, 2—3-lobed, membranous. *Marginal-floret*:—*Corolla-tube* tubular, about as long as the limb, pilose; limb obovate, irregularly 2-lobed. *Ovary* as long as the corolla, obovate, pubescent above; style linear, swollen at the base; style-branches linear, obtuse. *Pappus* none. *Disc-floret*:—*Corolla* subcampanulate above, tubular below, pilose; lobes 5, small, ovate. *Anthers* oblong, faintly eared at the base, with an oblong blunt appendage. *Ovary* obovate, scantily hairy or glabrous; style linear; style-branches linear, obtuse. *Pappus* of membranous ciliated paleae, longer than the corolla.

Annual herbs; leaves opposite, petioled, ovate, sometimes faintly crenate on the margins, glabrous; heads small, peduncled, terminal or axillary, sometimes arranged in cymes.

Described species 18, natives of the warmer parts of America; 1 species naturalized in South Africa and widely spread.

9282 111. *FLAVERIA* Juss., Gen., p. 186 (1789)

Heads heterogamous, 2—4-flowered, usually with 1 female floret and 1—2—3 fertile bisexual florets. *Involucre* more or less cylindric; bracts 3—4, in 1 row, obovate, veined, membranous. *Receptacle* small, nude. *Female floret*:—*Corolla-tube* tubular, longer than the limb, glabrous; limb elliptic, 2-lobed. *Ovary* longer than the corolla, oblong-linear, ribbed, glabrous; style terete; style-branches linear, obtuse. *Pappus* none. *Disc-floret*:—*Corolla-tube* subcampanulate above, tubular below, with a few deflexed long glandular hairs at the base, otherwise glabrous; lobes 5, small, ovate. *Anthers* oblong-linear, blunt, with an oblong blunt appendage. *Ovary* about $\frac{3}{4}$ as long as the corolla, oblong-linear, ribbed, glabrous; style linear; style-branches linear, truncate. *Pappus* none, or represented by a small crown.

Herbs, often glabrous; leaves opposite, sessile, lanceolate or lanceolate-elliptic, entire; individual heads small, aggregated into a false head which is terminal or axillary and sometimes arranged in a cymose manner.

Described species 26, mostly native of North and South America, 1 species in India and 1 in Australia; 1 species occurs in South Africa as a naturalized weed and is recorded from the Transvaal, Zululand, Natal and the Orange Free State.

9287 112. *CADISCUS* E. Mey., ex DC. Prodr., vol. 7, p. 254 (1838)
(*Symphipappus* Klatt)

Heads heterogamous, several-flowered, with marginal female florets and bisexual fertile disc-florets. *Involucre* campanulate; bracts connate into a cup in the lower half, herbaceous. *Receptacle* slightly convex, nude. *Marginal-floret*:—*Corolla-tube* tubular, shorter than the limb, glabrous; limb ovate, entire or shortly 3-lobed. *Ovary* about twice as long as the corolla, terete, linear in outline, ribbed, hirsute, with a mass of very fine hairs at the base; style linear, minutely bifid. *Pappus* of setose awns as long as the corolla-tube. *Disc-floret*:—*Corolla-tube* cylindric below, campanulate above, glabrous; lobes 5, ovate. *Anthers* linear, obtuse at the base, with an ovate appendage. *Ovary* almost 4 times as long as the corolla, terete, linear in outline, ribbed, hirsute, with a mass of fine hairs at the base; style terete; style-branches linear, obtuse. *Pappus* of setose awns as long as the corolla-tube.

A marsh herb; leaves alternate, linear, glabrous; heads small, peduncled, axillary.

Endemic; species 1, recorded from the Malmesbury district. (Type: *C. aquaticus* E. Mey.)

9291 113. SCHKUHRIA Roth, Catalog. Bot., vol. 1, p. 116 (1797)

Heads homogamous, 5—6-flowered, with the florets bisexual and fertile. *Involucre* campanulate; bracts in 1 row, oblong-elliptic, with membranous margins and apices, pustulate on the back. *Receptacle* nude. *Corolla-tube* tubular, glandular, campanulate above; lobes 5, obate. *Anthers* free, oblong, shortly eared at the base, with an ovate appendage. *Ovary* longer than the corolla, with a villous obconic foot, 4-angled, softly pilose; style terete, swollen at the base; style-branches linear, ovate at the apex and glandular on the back. *Pappus* of 8 elliptic and obovate paleae, about $\frac{1}{2}$ as long as the ovary, with the alternate paleae shortly awned.

Annual herbs, 6—24 inches tall, usually much-branched; leaves alternate, dissected, with the segments linear and punctate, glabrous; heads small, on slender peduncles, terminal and axillary, often arranged in a corymbose manner.

Described species 23, natives of South America; 1 species occurs in South Africa as a naturalized weed, widely spread. (Type: *S. abrotanoides* Roth)

9311 114. TAGETES Linn., Sp. Pl., ed. 1, p. 887 (1753)

Heads heterogamous, about 4-flowered, with usually 2 female florets and 2 bisexual fertile florets. *Involucre* cylindric; bracts connate high up, shortly 3-lobed above; lobes glandular on the margins. *Receptacle* nude. *Female floret*:—*Corolla-tube* cylindric, longer than the limb, pilose; limb transversely oblong, entire or 2-lobed above. *Ovary* about as long as the corolla, linear in outline, glabrous; style linear, slightly swollen at the base; style-branches linear, obtuse. *Pappus* of 4—5 paleae of different lengths, with the longest about $\frac{1}{2}$ as long as the corolla-tube, linear, acuminate. *Disc-floret*:—*Corolla-tube* tubular, subcampanulate above, sparsely glandular-hairy; lobes 5, ovate. *Anthers* linear-oblong, faintly eared at the base, with a lanceolate appendage. *Ovary* longer than the corolla, linear in outline, glabrous; style linear; style-branches short, oblong, truncate, glandular. *Pappus* of 4—5 paleae of unequal lengths, with the longest linear, acuminate and about $\frac{3}{4}$ as long as the corolla-tube.

Erect herbs, from a few inches to 3 feet high; leaves opposite, pinnately compound; leaflets linear, with immersed oil glands, glabrous; heads peduncled, usually aggregated into a corymb at the end of the branches.

Described species 81, natives of the warmer parts of North and South America; 1 species in South Africa as a naturalized weed, widely spread. (Type: *T. erecta* L.)

9320 115. ERIOCEPHALUS Linn., Sp. Pl., ed. 1, p. 926 (1753)

Heads heterogamous, 7—20-flowered, with 2—3 female florets and up to 17 bisexual sterile disc-florets. *Involucre* subglobose; bracts normally in 2 series; bracts of outer series 4—5 in 1 row, oblong, ovate, obovate, or boat-shaped, often with membranous margins and tips, often glandular on the back; bracts of inner series normally cup-shaped and 5-lobed, woolly. *Receptacle* small, paleate; paleae as long as or almost as long as the disc-florets, linear or lanceolate, woolly, membranous. *Marginal-florets*:—*Corolla* sometimes absent or with a cylindric tube and a scarcely developed 2—3-toothed limb much shorter than the tube; normally corolla-tube tubular and shorter than the limb, sometimes somewhat longer, usually

glandular; limb usually broader than long and distinctly or faintly 3-lobed, sometimes ligulate and oblong, often glandular on the back. *Ovary* obovate or obovoid, sometimes angled, glandular, or glandular on the margins only; style terete; style-branches about as long as or longer than the style, linear, obtuse. *Pappus* none. *Disc-floret*:—*Corolla-tube* tubular below, campanulate above, glabrous; lobes 5, ovate. *Anthers* normally linear, sometimes oblong-linear, blunt or very shortly eared at the base, with a lanceolate appendage. *Ovary* oblong-linear in outline, glabrous; style linear, sometimes swollen at the base, undivided, truncate and glandular, rarely shortly divided, oblong and truncate.

Rigid shrubs, rarely spinescent, silky-villous, canescent, or glabrous, aromatic; leaves mostly ericoid, alternate or subopposite, often fascicled, entire or rarely 3-lobed; heads small, shortly peduncled, arranged in racemes or subumbels, rarely solitary.

Described species 32, all but 2 species described from Mexico, natives of South Africa, widely spread from the Cape to South West Africa; occur also in the central regions and in Basutoland, not recorded from Natal or the Transvaal. (Type: *E. africanus* L.)

9321 116. LASIOSPERMUM Lag., Gen. et Spec. Pl., p. 31 (1816)

Heads homogamous, many-flowered, with bisexual florets or sometimes heterogamous with a few marginal female florets. *Involucre* somewhat discoid; bracts in 3 rows, elliptic or almost quadrate, with membranous margins and apex, glabrous. *Receptacle* flat, paleate; paleae slightly longer than the ovary, membranous, sometimes almost quadrate and with a linear appendage. *Marginal-floret*:—*Corolla-tube* somewhat flattened, almost $\frac{1}{2}$ of the length of the limb; limb long-linear; sometimes corolla tubular and marginal-floret minute. *Ovary* oblong, glabrous; style linear; style-branches linear, truncate. *Pappus* none. *Disc-floret*:—*Corolla-tube* tubular below; campanulate above, glabrous; lobes 5, ovate; sometimes corolla much shorter than the ovary. *Anthers* linear, obtuse, with a lanceolate appendage. *Ovary* ovoid, sometimes 3-angled and produced into 3 blunt shoulders which are hairy on the inner face, or ovary produced into membranous appendages and marginal wings and woolly; style terete, discoid at the base; style-branches linear, truncate, glandular-hairy at the apex. *Pappus* none.

Herbs, sometimes with thick roots; leaves alternate, variously pinnatisect; heads peduncled, solitary, terminal.

Endemic; species 5, found in the south-western districts and through the coastal belt to the East London district and on the west to South West Africa; also recorded from the central districts, Basutoland, the Orange Free State, and the Transvaal; not recorded from Natal. (Type: *L. pedunculare* Lag.)

9322 117. EROEDA Levyns, in Journ. S. Afr. Bot., vol. 14, p. 83 (1948) (*Oedera* Linn.)

Heads heterogamous, few-flowered, with marginal female florets and bisexual fertile (or some sterile) disc-florets; heads grouped together within a common involucre. *Common involucre* broadly campanulate; bracts in 3—4 rows, ovate, lanceolate, or spatulate-lanceolate, ciliate, sometimes glandular on the margins, pubescent or scabrid on the back. *Receptacle* paleate; paleae about as long as the disc-florets, acuminate, or obtuse, sometimes fimbriate above or irregularly 2—3-toothed, sometimes sparsely glandular on the back. *Marginal-floret*:—*Corolla-tube* tubular, somewhat compressed, about 2—5 times shorter than the limb, glabrous or glandular; limb long-linear,

minutely or scarcely toothed at the apex; some marginal-florets with a glandular tube 2—3 times longer than the small ovate limb. *Ovary* linear in outline, glabrous; style linear; style-branches slightly shorter than the style, linear, obtuse or truncate. *Pappus* a crown of very short paleae. *Disc-floret*:—*Corolla-tube* tubular and glandular below, campanulate or suddenly widening above. *Anthers* linear, obtuse, with a lanceolate appendage. *Ovary* linear, glabrous; style terete; style-branches linear, truncate, glandular at the apex. *Pappus* a crown of very short paleae.

Shrubs, glabrous, scabrid, or sparingly covered with long wool; leaves opposite, ternate, or spirally imbricate, ovate to linear; heads in sessile clusters at the apex of the branches.

Endemic; 6 species recorded from South Africa, extending from the south-western districts, through the coastal belt to the Komgha district. (Type: *E. capensis* (L.) Levyns=*Oedera prolifera* L.)

NOTE.—An occasional disc-floret was seen with 3 style-branches.—E. P. P.

9323. 118. EUMORPHIA DC., Prodr., vol. 6, p. 2 (1837)

Heads heterogamous, several-flowered, radiate, with marginal female florets and bisexual fertile disc-florets. *Involucre* ovoid or campanulate; bracts in 3—5 rows, ovate, lanceolate to linear; inner bracts distinctly ciliate near the apex; outer bracts sometimes with 2—5 glands on the back under the apex; all bracts sometimes with a broad membranous apex. *Receptacle* paleate; paleae longer than the disc-florets, linear, sometimes channelled, sometimes acuminate or with a bent apical appendage. *Marginal-floret*:—*Corolla-tube* tubular, from $\frac{1}{3}$ to $\frac{1}{2}$ as long as the limb, glabrous; limb oblong to linear, 3-toothed. *Ovary* linear or more or less obovate in outline, sometimes ribbed or angled, glabrous; style linear; style-branches linear, obtuse. *Pappus* 0. *Disc-floret*:—*Corolla-tube* tubular or tubular below and campanulate above, glabrous or glandular; lobes 5, ovate. *Anthers* linear, blunt, with a linear appendage. *Ovary* linear or more or less obovate in outline, terete or 3-angled, sometimes ribbed, glabrous; style linear; style-branches linear, truncate. *Pappus* none.

Woody shrubs up to 4 feet high, sometimes prostrate; leaves opposite or alternate, ericoid or linear, sometimes clustered, hairy or glabrous; heads terminal, solitary, shortly peduncled or subsessile, rarely heads corymbose; rays white.

Endemic; species 4, found on the high mountains above Beaufort West, Barkly East, along the Drakensbergen to the north-eastern Transvaal. (Type: *E. dregeana* DC.)

NOTE.—I consider the plant described by Wood & Evans as *E. sericea* as merely an erect form of *E. prostrata* Bolus.—E. P. P.

9325 119. PHAEOCEPHALUS Sp. Moore, in Journ. Bot., vol. 38, p. 156 (1900)

Heads homogamous, 6-flowered, discoid, with 1—2 florets fertile and the rest sterile. *Common involucre* campanulate; bracts in 2 rows, linear, densely pilose, ciliate; individual involucre more or less cylindric, with 2 linear bracts at the base; bracts 5, linear, densely pilose. *Receptacle* nude. *Corolla-tube* tubular below, campanulate above, sparsely glandular; lobes 5, lanceolate. *Anthers* linear, obtuse, with a lanceolate appendage. *Ovary* about as long as the tubular portion of the corolla, linear in outline, glabrous; style terete, swollen at the base; style-branches linear, truncate. *Pappus* a crown of linear or linear-lanceolate paleae, very much shorter than the ovary.

Woody shrub; young branches striate, pilose; leaves opposite, linear, entire, glabrous; group of heads terminal, solitary or 2—3 together.

Endemic; species 1, recorded from the Zwartberg Pass and the Wittenbergen near Matjesfontein. (Type: *P. gnidioides* Sp. Moore)

9326 **120. ATHANASIA** Linn., Sp. Pl., ed. 2, p. 1180 (1762)

Heads homogamous, 6- to many-flowered, discoid, with bisexual fertile florets. *Involucre* more or less globose, sometimes subcylindric; bracts in 1—5 rows, ovate, oblong, or lanceolate, scarious, sometimes ciliate, glabrous or pilose, sometimes glandular. *Receptacle* sometimes subconical, paleate; paleae slightly longer than the ovary or about as long as the floret, linear to oblong, sometimes irregularly cut above. *Corolla-tube* tubular below, campanulate or subcampanulate above, glabrous or sparsely glandular; lobes 5, lanceolate. *Anthers* linear, obtuse, with a lanceolate appendage. *Ovary* linear or oblong in outline, often ribbed, glabrous; style terete, distinctly or slightly swollen at the base; style-branches linear, truncate. *Pappus* a crown of paleae much shorter than the ovary, or of many swollen jointed hairs, longer than the ovary, or pappus absent.

Shrubs or undershrubs, usually aromatic; leaves alternate, entire, toothed, incised, or pinnatisect; heads small, arranged in a dense corymb, very rarely solitary.

Described species 70, mostly natives of Africa; a few species recorded from Madagascar and South America; 51 species described from South Africa and found mostly in the coastal districts, but extend into South West Africa and eastwards into Natal, Basutoland, and the Transvaal.

9330 **121. ANTHEMIS** Linn., Sp. Pl., ed. 1, p. 893 (1753)

Heads heterogamous, many-flowered, with the ray-florets fertile or sterile and the disc-florets bisexual and fertile, rarely heads homogamous, due to the absence of ray-florets. *Involucre* subglobose; bracts in 3 to many rows, oblong-linear, usually with a membranous apex. *Receptacle* convex or conical, paleate; paleae narrow-linear, almost as long as the florets. *Marginal-floret*:—*Corolla-tube* tubular, about $\frac{1}{3}$ as long as the limb, sometimes 2-winged, sometimes glandular; limb elliptic, entire, or 2—3-toothed. *Ovary* oblong in outline, often glandular; style rudimentary (in sterile florets) or none. *Pappus* none. *Disc-floret*:—*Corolla-tube* more or less compressed, sometimes 2-winged, broadened, or narrowly campanulate above; lobes 5. *Anthers* linear-oblong, obtuse, with an ovate appendage. *Ovary* oblong in outline; style subterete; style-branches linear, truncate, penicillate. *Pappus* none.

Annual or perennial herbs, glabrous or variously hairy; leaves alternate, incised, toothed, pinnatifid, or variously pinnatisect; heads sessile, solitary, terminal, peduncled, rarely heads in lax corymbs.

Described species about 100, natives of Europe, Asia, the Mediterranean, and North Africa; 2 species naturalized in South Africa and found in various parts of the Cape Province, Natal, East Griqualand, and the Transvaal. (Type: *A. arvensis* Linn.)

9336 **122. PHYMASPERMUM** Less., Synops. Compos., p. 253 (1832)

(*Adenachaena* DC.; *Iocaste* E. Mey.)

Heads heterogamous, few-flowered, with marginal female florets and discoid bisexual fertile florets, rarely heads homogamous due to the absence of ray-florets. *Involucre* campanulate; bracts in 4—5 rows, ovate to linear, sometimes with membranous tips, ciliate, glabrous, sometimes glandular on the back. *Receptacle* nude. *Marginal-floret*:—*Corolla-tube* one-third to one-quarter as long as the limb, tubular, sparsely glandular; limb oblong or elliptic, minutely 3-toothed. *Ovary* oblong or linear in outline, striate, glabrous or glandular-pubescent; style linear; style-branches linear, obtuse.

Pappus none, very rarely in form of a toothed crown. *Disc-floret*:—*Corolla-tube* tubular or tubular below and campanulate above, glabrous or glandular; lobes 5, ovate. *Anthers* linear, obtuse, with an oblong or lanceolate appendage. *Ovary* oblong to oblong-linear in outline, ribbed, glabrous or glandular; style terete, sometimes swollen at the base; style-branches linear, truncate. *Pappus* none, very rarely in the form of a toothed crown.

Glabrous shrubs or undershrubs; leaves alternate, small, linear or subterete, sometimes closely appressed, entire or 3-fid; heads solitary at the apex of the branches or laxly corymbose; rays white.

Endemic; species 9, mostly confined to the central and north-western districts of the Cape Province. (Type: *P. junceum* Less.)

9337 123. *LIDBECKIA* Berg., Descr. Pl. Cap., p. 306, t. 5 (1767)

Heads heterogamous, many-flowered, with marginal sterile florets and bisexual fertile disc-florets. *Receptacle* flat, nude. *Involucre* campanulate; bracts in 3 rows, lanceolate, sometimes ciliate, densely villous or glabrous. *Marginal-floret*:—*Corolla-tube* compressed, 3—4 times shorter than the limb, glandular and pilose; limb oblong-linear, 2-toothed, glandular on the back. *Ovary* linear in outline, glandular; style linear; style-branches linear, obtuse. *Pappus* none. *Disc-floret*:—*Corolla-tube* somewhat compressed, glandular; lobes 4, ovate. *Anthers* linear, obtuse, with an oblong appendage. *Ovary* oblong in outline, glandular; style terete, somewhat thickened at the base; style-branches linear, truncate. *Pappus* none.

Herbaceous, up to 1½ feet high, pilose; leaves alternate, sessile or shortly petioled, more or less obovate, pinnately or digitately lobed, punctate, pilose or glabrous; heads on short or long pilose or glabrous peduncles; rays white.

Endemic; species 2, recorded from the Clanwilliam, Tulbagh, Ceres, and Piquet-berg districts. (Type: *L. pectinata* Berg.)

9337a 124. *INEZIA* Phill., Kew Bull., p. 297 (1932)

Heads heterogamous, many-flowered, with marginal female florets and discoid fertile bisexual fertile florets. *Involucre* campanulate; bracts in 3 rows, linear-lanceolate to broadly linear; pilose; the inner bracts with membranous tips. *Receptacle* conical, nude. *Marginal-floret*:—*Corolla-tube* not differentiated from the ovary, much compressed, $\frac{1}{3}$ to $\frac{1}{4}$ as long as the limb, long-ciliate and glandular on the margins; limb obovate, 2—3-toothed. *Ovary* compressed, oblong in outline, long-ciliate and glandular on the margins; style subterete; style-branches oblong, obtuse. *Pappus* none. *Disc-floret*:—*Corolla-tube* somewhat compressed, winged, glandular on the margins, glabrous; lobes 4, with the 2 lateral lobes somewhat cucullate, dorsal and ventral lobes ovate. *Anthers* oblong, obtuse, with an ovate appendage. *Ovary* oblong, sparsely glandular; style terete, somewhat swollen at the base; style-branches oblong, truncate. *Pappus* none.

Perennial herb, with unbranched stems from a woody rootstock; leaves alternate, linear to lanceolate, punctate, pilose; heads solitary, terminal, peduncled.

Endemic; species 1, recorded from the north-eastern Transvaal and Swaziland. (Type: *I. integrifolia* (Klatt) Phill.)

9338 125. *THAMINOPHYLLUM* Harv., in Fl. Cap., vol. 3, p. 155 (1864—65)

Heads heterogamous, 7—12-flowered, with few marginal sterile florets and some bisexual fertile disc-florets. *Involucre* campanulate; bracts in 3—4 rows, linear-lanceolate to oblong-linear, ciliate or fimbriate, pilose on the back. *Receptacle* nude. *Marginal-floret*:—*Corolla-tube* about

$\frac{1}{3}$ as long as the limb or scarcely developed, glabrous; limb oblong-elliptic, sometimes glandular. *Ovary* oblong in outline, with a few scattered glands; style none. *Pappus* none. *Disc-floret*:—*Corolla* tubular, somewhat compressed, glandular; lobes normally 4 (an occasional floret with 5 lobes), ovate, cucullate, with an apical horn from back of the lobe. *Anthers* oblong, obtuse, with an oblong appendage. *Ovary* oblong-obovate, bluntly beaked, sometimes angled and ribbed, glabrous; style subterete, sometimes discoid at the base; style-branches linear-oblong, truncate. *Pappus* none.

Small shrubs with silky branches; leaves alternate, ericoid, crowded, silky; heads in small groups at the ends of the branches and more or less surrounded by the upper leaves; rays white.

Endemic; species 2, recorded from the Caledon, Matjesfontein, and George districts. (Type: *T. mundtii* Harv.)

9339

126. *MATRICARIA* Linn., Sp. Pl., ed. 1, p. 890 (1753)

Heads heterogamous, many-flowered, with marginal female florets and bisexual fertile disc-florets, the inner disc-florets sterile. *Involucre* subglobose; bracts in 2—5 rows, elliptic-oblong, with membranous margins and apices. *Receptacle* a raised disc, globose or conical, nude. *Marginal-floret*:—*Corolla-tube* split to the base, compressed, about $\frac{1}{3}$ as long as the limb, glabrous; limb obovate, obovate-elliptic, or linear-oblong, rounded or 2-lobed at the apex. *Ovary* compressed, elliptic, sparsely glandular or covered with long hygroscopic hairs; style terete; style-branches oblong, obtuse. *Pappus* none, or a crown of irregular paleae or a symmetrical membranous cup. *Disc-floret*:—*Corolla-tube* tubular, or tubular below and campanulate above, sometimes globose at the base, glabrous or glandular; lobes 4, ovate, glandular. *Anthers* oblong, obtuse, with an oblong or more or less quadrate appendage. *Ovary* oblong, obtusely or acutely angled, glandular or covered with long hygroscopic hairs; style terete, sometimes slightly discoid at the base; style-branches oblong, truncate. *Pappus* none or of 4 lanceolate paleae on the fertile florets or an asymmetrical membranous cup.

Annual or perennial herbs; leaves alternate, variously pinnatisect, with the segments linear or filiform; heads small or medium-sized, peduncled at the apices of the branches.

Species between 20 and 30, almost all natives of the northern hemisphere; 1 species occurs in tropical Africa, 11 species in South Africa, distributed from the Van Rhynsdorp district, through the coastal belt to Natal. (Type: *M. chamomilla* L.)

NOTE.—The plant described by Klatt (*Bull. Herb. Boiss.*, vol. 3, p. 437 (1895)) from South West Africa as *M. pinnatifida* is, according to Hutchinson (*Kew Bulletin*, p. 115 (1917)), a species of *Anisopappus*. It is doubtful whether two other species from South West Africa, viz. *M. schinziana* Thellung and *M. otaviensis* Dinter, are species of *Matricaria*.—E. P. P.

9340

127. *LEPIDOSTEPHIUM* Oliv., in Hook. Ic. Pl., pl. 1030 (1868)

Heads heterogamous, many-flowered, with marginal female florets and bisexual fertile florets. *Involucre* campanulate; bracts in 6 rows, lanceolate *Corolla-tube* cylindric, $\frac{1}{3}$ to $\frac{1}{4}$ as long as the limb, sparsely glandular; limb linear, 3-toothed. *Ovary* terete, linear in outline, strigose, glandular; style terete, swollen at the base; style-branches linear, obtuse. *Pappus* a crown of irregularly cut paleae, much shorter than the ovary. *Disc-floret*:—*Corolla-tube* tubular below, narrowly campanulate above, sparsely glandular; lobes 5, ovate. *Anthers* linear, obtuse, with an oblong appendage. *Ovary* terete, linear in outline, setose, glandular; style terete, style-branches linear, truncate. *Pappus* a crown of irregularly cut paleae, shorter than the ovary.

A herb unbranched, up to 18 inches high; leaves radical and cauline, petiolate, lanceolate to linear, remotely toothed, cobwebby beneath, scabrid above; capitula long-peduncled, arranged in a lax corymb; rays blue.

Endemic; species 1, recorded from the districts of Victoria East, Kingwilliamstown, and Stutterheim. (Type: *L. denticulatum* Oliv.)

9341

128. *CHRYSANTHEMUM* Linn., Sp. Pl., ed. 1, p. 887 (1753)

Heads heterogamous, many-flowered, with female marginal-florets and bisexual fertile and sterile disc-florets. *Receptacle* flat or conical, nude. *Involucre* campanulate; bracts in 2—4 rows, ovate, obovate, or lanceolate, sometimes concave, often with brown scarious margins, sometimes with membranous tips, sometimes glandular. *Marginal-floret*:—*Corolla-tube* sometimes scarcely developed, or tubular, somewhat compressed, about $\frac{1}{3}$ as long as the limb, sparsely glandular; limb oblong-linear or oblong-elliptic, 2—3-toothed or entire, sometimes glandular on the back. *Ovary* semi-terete or compressed, oblong or obovate in outline, sometimes one-third as long as the limb, sparsely glandular; limb oblong-linear or oblong-elliptic, 2—3-toothed or entire, sometimes glandular on the back. *Ovary* semiterete or compressed, oblong or obovate in outline, sometimes with a hyaline marginal wing, sometimes ribbed, glabrous; style terete, sometimes slightly swollen at the base; style-branches oblong, obtuse. *Pappus* of hyaline paleae, with one palea larger than the others, shorter than the ovary, or pappus an asymmetrical cup about as long as the ovary, or pappus none. *Disc-floret*:—*Corolla* tubular or tubular below and campanulate above, glandular; lobes 5, ovate, sometimes horned on the back. *Anthers* oblong-linear, obtuse, with an ovate appendage. *Ovary* compressed, obovate, with a hyaline marginal wing, glabrous; style terete, swollen at the base; style-branches oblong, truncate. *Pappus* of hyaline paleae with one palea larger than the others, shorter than the ovary, or pappus of hyaline paleae almost as long as the ovary, or pappus 0.

Annual or perennial herbs, rarely woody, glabrous, or laxly pubescent, rarely viscid; leaves alternate, undivided, entire, or toothed, or often incised or dissected; heads large or medium-sized, on peduncles, terminal, rarely corymbose; rays normally white.

Species about 200, natives of Africa, Europe, Asia, and Arctic America; 5 species in South Africa and a few introduced species found in the coastal belt from South West Africa to Natal and the Transvaal. (Type: *C. coronaria* L.)

9351

129. *COTULA* Linn., Sp. Pl., ed. 1, p. 891 (1753)

(*Cenia* Comm.; *Otochlamys* DC.)

Heads heterogamous, few- to many-flowered, with marginal female florets and bisexual fertile (or sometimes sterile) disc-florets. *Involucre* subglobose or campanulate; bracts in 3—4 rows, ovate, obovate, oblong or lanceolate, sometimes transversely striate or nerved, sometimes with membranous margins and apices, glabrous. *Receptacle* flat, convex or conical, sometimes covered with the tooth-like pedicels of the florets, without paleae. *Marginal-floret*:—*Corolla* none. *Ovary* elliptic or oblong, with a broad or narrow marginal wing which is sometimes cordate at the base and 2-lobed above, sometimes ciliate, glabrous. *Pappus* none. *Disc-floret*:—*Corolla-tube* campanulate, or tubular below and campanulate, or sometimes globose above, or tubular, or funnel-shaped, sometimes 4-angled, rarely expanded into 2 or 3 broad membranous wings, sometimes produced at the base into a sheath wholly or partly enveloping the ovary or scarcely produced, sparsely glandular or glabrous; lobes 4, ovate, sometimes gibbous, sometimes glandular; sometimes the outermost disc-florets with a bilabiate limb with

the upper lip elliptic and concave and the lower lip 3-toothed. *Anthers* varying from linear to elliptic, blunt, with an ovate or lanceolate appendage. *Ovary* usually somewhat compressed, elliptic, oblong, or elliptic-oblong in outline; style linear or terete, sometimes swollen at the base; style-branches obovate, oblong, or almost quadrate, truncate. *Pappus* none.

Annuals or perennials, sometimes dwarf, herbaceous or woody; leaves alternate, very rarely opposite, pinnatisect or bi-pinnatisect, rarely entire, rarely toothed, glabrous or hairy; heads small or rarely medium-sized, solitary, peduncled, sometimes with the peduncle inflated under the head.

Described species about 100, natives of temperate and subtropical regions; some species found in extra-tropical America and in Australia, about 35 species in South Africa, fairly widely distributed. (Type: *C. coronopifolia* L.)

NOTE.—Mrs. M. R. Levyns (*Journ. S. Afr. Bot.*, vol. 7, p. 131 (1941)) suggested that the genera *Cenia* Comm. and *Otochlamys* DC. could not be maintained and should be sunk under *Cotula* L. The genus *Otochlamys* DC. with 2 described species from South Africa is characterized by the corolla being produced into a sheath completely enveloping the ovary; in some species of *Cotula* the corolla is also produced, but only partially covers the ovary; in the specimens of *Cenia* I examined, the corolla is scarcely produced. In some specimens of *Cenia* the outer disc-florets have bilabiate corollas which may warrant their being kept separate from the *Cotula*.—E. P. P.

9356 130. SCHISTOSTEPHIUM Less., Synops. Compos., p. 251 (1832)

Heads homogamous, many-flowered, with bisexual fertile disc-florets or heterogamous with marginal female florets and bisexual fertile disc-florets. *Involute* globose or subglobose; bracts in 3—4 rows; linear, lanceolate, or ovate, sometimes acuminate, sometimes ciliate, pilose. *Receptacle* flat, convex or conical, nude. *Marginal-floret*:—*Corolla* a 2-lobed or linear ligule, sometimes a 4-lobed compressed tube resembling the disc-florets but without stamens, sometimes scarcely developed, sometimes pedicelled. *Ovary* somewhat compressed, elliptic, sometimes narrowly winged, glandular, sometimes pilose; style terete; style branches oblong, truncate. *Pappus* none. *Disc-floret*:—*Corolla-tube* tubular or tubular below and subcampanulate above, sometimes bluntly 4-angled, sometimes slightly produced at the base, sparsely glandular; lobes 4, ovate, glandular. *Anthers* elliptic or linear-oblong, obtuse at the base, with an ovate appendage. *Ovary* compressed, oblong-obovate, sometimes keeled, sometimes narrowly winged, glabrous; style terete, swollen at the base; style-branches oblong or linear, truncate. *Pappus* none.

Herbs or undershrubs, silky-villous or glabrate; leaves alternate, fan-shaped and incised or once or twice pinnatisect; heads small, arranged in corymbs at the apex of the branches, solitary and long-peduncled in one species.

An African genus of 12 species, extending from the Transvaal, Swaziland, Zululand, Natal, Basutoland, through the coastal belt to the East London district; also recorded from the Albany and Queenstown districts. (Type: *S. flabelliforme* Less.)

9357 131. HIPPIA Linn., Mant., pt. 2, p. 291 (1771)

Heads heterogamous, several-flowered, with marginal female florets and bisexual sterile disc-florets. *Receptacle* flat, convex, or conical, nude. *Involute* campanulate; bracts in 3—4 rows, ovate, lanceolate, obovate, or spatulate, sometimes ciliate and pilose on back, often glandular. *Marginal-floret*:—*Corolla* a very short tube or conical, minutely 2—4-lobed, usually glabrous, sometimes scarcely developed. *Ovary* broadly elliptic, obovoid, sometimes with a broad or narrow wing, pilose, pubescent, glandular, or papillate; style linear; style-branches about as long as the style, linear, obtuse. *Pappus* none. *Disc-floret*:—*Corolla-tube* funnel-shaped or tubular below and campanulate above, sometimes narrowly winged, glandular; lobes 5, ovate. *Anthers* linear-oblong, blunt, with an oblong or oblong-linear

appendage. *Ovary* linear; style linear or terete, sometimes swollen at the base, undivided, disciform and glandular at the apex. *Pappus* none.

Herbs or undershrubs, aromatic; leaves alternate, pinnatifid or pinnatisect, rarely entire; heads small, arranged in corymbs at the apex of the branches.

Endemic; species 7, found in the south-western and south-eastern districts of the Cape Province; also recorded from the Komgha and Queenstown districts and from Seven Weeks Poort in the Laingsburg district. (Type: *H. frutescens* (L.) L.)

9358

132. *ARTEMISIA* Linn., Sp. Pl., ed. 1, p. 845 (1753)

Heads heterogamous, few-flowered, with marginal female florets and bisexual fertile disc-florets or homogamous by the absence of the female florets. *Involucre* ovoid, globose, or broadly campanulate; bracts in few (3) rows, imbricate, with scarious or membranous margins. *Receptacle* flat, convex, or hemispherical, nude or hirsute-fimbriate. *Marginal-floret*.—*Corolla* narrowly tubular, shortly 2—3-fid. *Ovary* obovoid, subterete, or often compressed, sometimes 2-ribbed or finely multistriate, glabrous, pilose, rarely woolly; style-branches linear, obtuse. *Pappus* none. *Disc-floret*.—*Corolla* tubular, often widened above; lobes 5. *Anthers* obtuse or shortly eared at the base. *Ovary* globose, glabrous; style terete, slightly swollen at the base; style-branches linear-spathulate, faintly 2-fid at the apex. *Pappus* none.

Herbs or undershrubs, aromatic, often canescent; leaves alternate, entire, incised, or variously pinnately dissected; heads small, pendulous, rarely erect, arranged in a panicle, or solitary, never in corymbs.

Described species over 300, mostly natives of the northern hemisphere; 3 species in South Africa, common in the coastal districts of the Cape Province; also found in Natal, Zululand, Basutoland, Swaziland, and the Transvaal. (Type: *A. vulgaris* L.)

NOTE.—The South African species have heterogamous heads; the ovary of both the female and bisexual florets is globose and glabrous; the anthers are oblong and shortly eared at the base.—E. P. P.

9363

133. *ASAEMIA* Harv., in Harv. & Sond. Fl. Cap., vol. 3, p. 187 (1864—65)

Heads homogamous, few- to several-flowered, discoid, with bisexual fertile florets. *Involucre* ovoid; bracts in 4—5 rows, varying from ovate and oblong to linear, hard, sometimes with membranous margins, glabrous. *Receptacle* flat, nude. *Corolla-tube* tubular, usually slightly widening upwards, glabrous; lobes 5, lanceolate, sometimes cucullate at the apex. *Anthers* linear to oblong-linear, obtuse, with a lanceolate or ovate appendage. *Ovary* oblong in outline, 2—4-angled, glabrous; style terete, slightly swollen at the base; style-branches linear, truncate. *Pappus* none.

Small woody bushes up to 18 inches high, sometimes spiny, glabrous; leaves opposite, linear, connate and sheathing at the base; heads small, solitary, sessile, axillary or terminal.

Endemic; species 2, recorded from the Ceres, Laingsburg, de Aar, Williston, Willowmore, Carnarvon, Calvinia, Prieska, Kenhardt, and Van Rhynsdorp districts; also from Namaqualand and South West Africa. (Type: *A. axillare* (Thunb.) Harv.)

9364

134. *GYMNOPENTZIA* Benth., in Benth. & Hook., Gen. Pl., vol. 2, pp. 537 and 1235 (1783)

Heads homogamous, several- to many-flowered, discoid, with bisexual fertile florets. *Involucre* campanulate; bracts in 4—5 rows, linear to lanceolate, sometimes with membranous margins, ciliate or fimbriate, glabrous. *Receptacle* flat, slightly convex or conical, nude. *Corolla-tube* cylindric or

tubular below, campanulate above, glandular; lobes 5, ovate. *Anthers* linear, obtuse, with a lanceolate appendage. *Ovary* terete, oblong in outline, faintly ribbed, glandular-pubescent; style terete, swollen at the base; style-branches oblong, truncate, penicillate. *Pappus* none.

Woody bushes 2—3 feet high or prostrate; leaves opposite, connate and sheathing at the base, linear, bifurcate or undivided, glabrous or pilose; heads small, arranged in a corymb at the ends of the branches.

Endemic; species 2, perhaps 1—2 undescribed, recorded from the Komgha, Stockenström, and Queenstown district, also from Natal, Basutoland, and the Transvaal. (Type: *G. bifurcata* Benth.)

9365

135. PEYROUSEA DC., Prodr., vol. 6, p. 76 (1837)

Heads homogamous, many-flowered, discoid, with bisexual fertile florets. *Involucre* campanulate; bracts in 4 rows, linear, linear-oblong, or linear-spathulate, sometimes fimbriate on the margins, pilose. *Receptacle* conical, nude. *Corolla-tube* obscurely 4-angled, glandular; lobes 4, ovate. *Anthers* oblong, obtuse, with an ovate appendage. *Ovary* slightly longer than the corolla, somewhat compressed, oblong-obovate, glabrous; style terete, slightly swollen at the base; style-branches linear, truncate. *Pappus* none.

A shrub 1—5 feet high; branches striate, pilose; leaves alternate, sessile, oblong, lanceolate, linear-lanceolate, or linear, silky; heads peduncled or subsessile, terminal on lateral branches, usually arranged in a corymbose manner, sometimes heads solitary.

Endemic; species 2, recorded from the George, Knysna, Humansdorp, and Uniondale districts. (Type: *P. umbellatus* (L. fil.) Fourcade.)

9366

136. PENTZIA Thunb., Prod. Fl. Cap., vol. 2, p. 145 (1800)

Heads homogamous, several flowered, with bisexual fertile florets. *Receptacle* flat, convex or globose, nude. *Involucre* globose; bracts in 4 rows, usually ovate, often with membranous margins, sometimes with membranous apices, hairy or glabrous. *Corolla-tube* tubular, sometimes subcampanulate above, glandular or glabrous; lobes 5, ovate, sometimes cucullate. *Anthers* linear or oblong, blunt, with an ovate, oblong, or linear appendage. *Ovary* subglobose or flattened, elliptic or oblong in outline, often striate, usually glabrous, sometimes hairy; style terete, sometimes swollen at the base; style-branches linear, truncate. *Pappus* of one lateral broad membranous palea shorter than the ovary, or a membranous cup or a toothed crown, or pappus none.

Shrubs or herbs, cano-pubescent, glandular, or glabrous; leaves alternate, fan-shaped and toothed or lobed towards the apex or much divided, sometimes linear and entire; heads small, mostly solitary and peduncled or arranged in a corymbose manner.

An African genus of 38 species; 36 species occur in South Africa, widely distributed. (Type: *P. dentata* (L.) O. Kuntze=*P. crenata* Thunb.)

9369

137. STILPNOPHYTUM Less., Synops. Compos., p. 264 (1832)

Heads homogamous, few- to many-flowered, discoid, with bisexual outer fertile florets and inner sterile florets. *Involucre* ellipsoid, ovoid, or broadly campanulate; bracts in 3—4 rows, ovate, elliptic, lanceolate, or linear, sometimes with membranous tips, sometimes keeled, sometimes minutely ciliate, glabrous. *Receptacle* flat, nude. *Corolla-tube* cylindric, somewhat widened below and campanulate above or tubular below and campanulate above, glandular or glabrous; lobes 5, ovate or linear-lanceolate, glabrous or glandular. *Anthers* linear, blunt or faintly eared, with a lanceolate appen-

dage. *Ovary* linear in outline, ribbed or winged, glabrous; style terete; style-branches linear, truncate. *Pappus* none.

Shrub up to 3 feet high; leaves alternate, more or less imbricate or scattered, broadly or narrowly linear, epunctate, glabrous; heads small to medium-sized, arranged in corymbs.

Endemic; species 4, found in the Clanwilliam, Worcester, and Ceres districts, and then in the coastal belt to the Humansdorp district; also recorded from the Zwartberg Pass. (Type: *S. linifolium* (Thunb.) Less.)

9370 **138. MARASMODES DC.**, Prodr., vol. 6, p. 136 (1837)

Heads homogamous, few-flowered, discoid, with all the florets bisexual and fertile. *Involucre* subcampanulate or spindle-shaped; bracts in 6—7 rows, ovate, oblong, or lanceolate, sometimes with the inner or all with a membranous tip. *Receptacle* flat, nude. *Corolla-tube* tubular below, campanulate or subcampanulate above, usually sparsely glandular; lobes 5, ovate. *Anthers* linear, obtuse, with a linear or lanceolate appendage. *Ovary* about as long as the tubular portion of the corolla; style terete, discoid at the base; style-branches linear, truncate. *Pappus* an asymmetrical cup about $\frac{1}{2}$ as long as the ovary or of separate paleae, $\frac{1}{3}$ to $\frac{2}{3}$ as long as the ovary.

Shrubby plants; leaves alternate, ericoid or linear, sometimes clustered, glandulose-punctate, glabrous; heads sessile, solitary at the ends of short axillary branchlets, rarely more or less clustered.

Endemic; species 5, recorded from the Cape, Paarl, Stellenbosch, Piquetberg, Malmesbury, and Worcester districts. (Type: *M. polycephalus* DC.)

9370a **139. BRACHYMERIS DC.**, Prodr., vol. 6, p. 76 (1837)

Heads homogamous, few- to many-flowered, discoid, with all the florets bisexual and fertile. *Involucre* ovoid or campanulate; bracts in 4 rows, lanceolate, ovate, or oblong, with the inner sometimes scarious and fimbriate at the apex, glabrous, rarely pilose. *Receptacle* subglobose or conical, nude. *Corolla-tube* tubular below, campanulate above, glandular; lobes 5, ovate. *Anthers* linear or linear-oblong, blunt or minutely eared, with an ovate appendage. *Ovary* about as long as the corolla or the tubular portion of the corolla, sometimes shorter, terete, cylindric or oblong or oblong-obovate in outline, ribbed, pubescent or pilose; style terete, discoid or globose at the base; style-branches linear, truncate, penicillate. *Pappus* none.

Branched shrubs 2—4 feet high, rarely striate and silky or the branchlets ending in spines; leaves alternate, crowded, narrow-linear, epunctate, glabrous, rarely leaves small and scattered; heads mostly arranged in corymbs, rarely heads solitary.

An African genus of 6 species all of which occur in South Africa and one of which is recorded from Rhodesia; found in the northern Transvaal, Swaziland, Natal, the Orange Free State, Tembuland, and also in the Cradock, Richmond, and Graaff-Reinet districts. (Type: *B. scoparia* DC.)

9373 **140. EREMOTHAMNUS O. Hoffm.**, Engl., Bot. Jahrb., vol. 10, p. 278, tab. 9b (1889)

Heads heterogamous, many-flowered, with marginal female florets and bisexual fertile disc-florets. *Involucre* campanulate; bracts in 5—6 rows, all scarious and glabrous; outer ovate, pungent; inner oblong with a broad membranous apex. *Receptacle* basin-shaped, nude. *Marginal floret*:—*Corolla-tube* cylindric, about $1\frac{1}{2}$ times as long as the limb, glabrous; limb oblong-elliptic, 3-toothed, glandular on the back. *Ovary* more or less obovoid, densely villous with long brown hairs; style terete; style-branches

linear, obtuse, glandular on the back. *Pappus* of numerous scabrid bristles as long as the corolla-tube. *Disc-florets*:—*Corolla-tube* cylindric below, widening above, glandular on the upper portion; lobes linear. *Anthers* linear, shortly sagittate, with a linear appendage. *Ovary* more or less obovoid, densely villous with long brown hairs; style terete; style-branches linear, subacute, densely glandular-hirsute on the back. *Pappus* of numerous scabrid bristles, almost as long as the corolla-tube.

A dwarf woolly shrub growing between rocks; leaves alternate, spatulate to linear-spatulate, usually 3-lobed above, densely woolly; heads solitary, terminal, sessile.

Endemic; species 1, recorded from South West Africa. (Type: *E. marlothianus* O. Hoffm.)

9377

141. HERTIA Neck., Elem., vol. 1, p. 8 (1790)

(*Othonnopsis* Jaub. & Spach.; *Doria* Less. partly)

Heads heterogamous, several-flowered, with marginal female florets and bisexual sterile disc-florets, rarely an occasional floret fertile. *Involucre* usually campanulate, more rarely tubular; bracts in one row, usually connate low down, rarely free. *Receptacle* flat, nude. *Marginal-floret*:—*Corolla* tubular or cylindric, shorter than the ovary, faintly toothed or almost truncate, glabrous, more rarely with a short ligule or with a linear-oblong 3-toothed limb about as long as the tube. *Ovary* biconvex, obovoid, oblong or oblong-linear in outline, ribbed, pubescent, glandular-villous, or glabrous; style terete, projecting well beyond the corolla-tube; style-branches linear, obtuse. *Pappus* of many bristles as long as the style or as long as the corolla-tube, rarely pappus double of soft linear paleae and delicate caducous bristles much longer than the corolla. *Disc-floret*:—*Corolla-tube* tubular below, campanulate or widened above, ribbed, glabrous; lobes 5, ovate. *Anthers* linear, faintly sagittate at the base, with an ovate appendage. *Ovary* linear or oblong-linear, longer than the lower portion of the corolla-tube, ribbed, glabrous; style terete; style-branches oblong-linear, obtuse or truncate. *Pappus* of delicate bristles about as long as the lower portion of the corolla-tube or of semi-caducous fine bristles about $\frac{3}{4}$ as long as the corolla.

Shrubs from 9 inches to 3 feet high; leaves alternate, obovate or obovate-spatulate, sometimes linear or lanceolate, sometimes decurrent, sometimes glaucous, glabrous; heads corymbose or solitary or 2—3 together, sessile or subsessile, rarely on long peduncles.

An African genus of about 12 species, most of which occur in South Africa, and are recorded from South West Africa, Namaqualand, Bechuanaland, many of the north-western central districts of the Cape Province; also recorded from the Transvaal and Natal. (Type: *H. cheirifolia* (L.) O. Kuntze)

9385

142. STILPNOGYNE DC., Prodr., vol. 6, p. 293 (1837)

Heads homogamous, few-flowered, with bisexual fertile florets. *Involucre* campanulate; bracts 6, in 1 row, linear-lanceolate, with submembranous margins, glabrous. *Receptacle* flat, nude. *Corolla-tube* cylindric below, campanulate above, glabrous; lobes 5, lanceolate. *Anthers* linear, obtuse, with a lanceolate appendage. *Ovary* terete, linear in outline, slightly longer than the corolla-tube, shortly pilose; style linear; style-branches linear, truncate. *Pappus* of many bristles as long as the corolla.

A small annual glabrous herb; leaves alternate, petioled, obovate, lobed above; heads small, long-peduncled, terminal and axillary.

Endemic; species 1, recorded from Namaqualand and the Calvinia, Sutherland, Clanwilliam, and Swellendam districts. (Type: *S. bellidioides* DC.)

9391 143. *ALCIOPE* DC., Prodr., vol. 5, p. 209 (1836)

Heads heterogamous, many-flowered, with marginal female florets and bisexual fertile disc-florets. *Involucre* campanulate; bracts in 3 rows, linear or linear-oblong, somewhat leathery, ciliate above, woolly on the back. *Receptacle* flat, nude. *Marginal-floret*:—*Corolla-tube* tubular, glabrous; limb from 2 to $2\frac{1}{2}$ times as long as the tube, linear or linear-oblong, 3-toothed. *Ovary* semi-terete, linear or oblong in outline, ribbed, pubescent; style linear, thickened at the base; style-branches linear, obtuse. *Staminodes* sometimes present. *Pappus* of numerous bristles as long as the corolla-tube. *Disc-floret*:—*Corolla-tube* tubular, widened above, glabrous; lobes 5, lanceolate-linear. *Anthers* linear, shortly sagittate at the base, with a lanceolate appendage. *Ovary* semi-terete, linear or oblong in outline, pubescent; style terete, thickened at the base; style-branches linear, obtuse. *Pappus* of numerous bristles almost as long as the corolla.

Woolly subherbaceous plants 1—3 feet high; leaves alternate, petioled, elliptic or ovate, sometimes with a few blunt teeth on the margins, white woolly or tomentose beneath, with the young leaves tomentose on upper surface becoming glabrous with age; heads large, on peduncles up to 9 inches long or peduncles 1—2 inches long; rays yellow.

Endemic; species 2, found in the south-western districts of the Cape Province. (Type: *A. tabularis* (Thunb.) DC.)

9401 144. *LOPHOLAENA* DC., Prodr., vol. 6, p. 335 (1837)

Heads homogamous, few- to many-flowered, with bisexual fertile florets or the innermost sterile. *Involucre* narrowly campanulate; bracts in 1 row, few to many, frequently connate for about $\frac{2}{3}$ of their length, at length free to the base, flat or concave within, conversely keeled without, more rarely with a wide median longitudinal crest, with broad membranous margins, glabrous, very rarely hairy. *Receptacle* flat, honeycombed, with the margins of the alveoli slightly raised. *Corolla-tube* cylindric below, becoming campanulate above, very generally articulated at about the middle of the cylindric part, glabrous; lobes 5, deltoid to ovate-deltoid. *Anthers* linear, blunt, with an ovate to ovate-oblong appendage. *Ovary* ovoid or oblong in outline, glabrous to densely white villous; style terete; style-branches linear, obtuse, papillose on the upper face, densely hairy on the outer convex surface. *Pappus* in 2—3 rows, of many slender bristles.

Hemicryptophytes, with several stems arising separately from a more or less thickened woody-tuberous rootstock, or bushily branched small (rarely tall) shrubs; leaves alternate, sessile or subsessile, linear to suborbicular, often broadly amplexicaul and decurrent, frequently glaucous; heads solitary or clustered, or arranged in panicles.

An African genus of 17 species; 6 recorded from South Africa, found in South West Africa, Namaqualand, the Transvaal, Swaziland, Natal, and Pondoland. (Type: *L. dregeana* DC.)

9405 145. *GYNURA* Cass., Dict. Sc. Nat., vol. 34, p. 391 (1825)

Heads homogamous (in the South African species), many-flowered, with bisexual fertile disc-florets, rarely heterogamous, with a few marginal female florets. *Involucre* cylindric, or subcampanulate; bracts in 1 row, free to base, linear to linear-oblong, with membranous margins, glabrous. *Receptacle* flat, nude. *Corolla-tube* cylindric, widened above, glabrous; lobes 5, lanceolate or linear. *Anthers* linear, obtuse, with a lanceolate appendage. *Ovary* semi-terete, oblong in outline, ribbed, pilose, pubescent, or glabrous; style linear, sometimes globose at the base; style-branches linear, acute

or with a linear appendage, sometimes glandular on the back. *Pappus* of many delicate caducous bristles in many rows, about as long as the corolla.

Herbs, or rarely low undershrubs, glabrous or hispid-pubescent; leaves alternate, entire, dentate, pinnately lobed or dissected; heads medium-sized, arranged in lax corymbs, or solitary at the apex of the branches.

Described species about 113, natives of Africa, Madagascar, India, China, Japan, the Malay Peninsula, and the Philippine Islands; 3 species recorded from South Africa, found in South West Africa, the Transvaal, Swaziland, Natal, Pondoland, and the Komgha district. (Type: *G. dubia* Cass.)

9406 146. CINERARIA Linn., Sp. Pl., ed. 2, p. 1242 (1763)

Heads heterogamous, many-flowered, with marginal female florets and bisexual fertile or sterile disc-florets. *Involucre* campanulate; bracts 1—2 rows, linear, often acuminate, sometimes with membranous margins. *Receptacle* flat, nude. *Marginal-floret*:—*Corolla-tube* cylindric, slightly shorter to $2\frac{1}{2}$ times shorter than the limb, pubescent or glabrous; limb elliptic, oblong or elliptic-oblong, 3-toothed. *Ovary* linear or linear-oblong in outline, sometimes 3-winged, pubescent, villous or glabrous; style terete, slightly swollen at the base; style-branches linear, obtuse. *Pappus* of several delicate caducous bristles, as long as the corolla-tube. *Disc-floret*:—*Corolla-tube* cylindric below, widened or narrowly campanulate above, glabrous; lobes 5, ovate. *Anthers* linear, blunt or faintly sagittate, with an ovate-oblong appendage. *Ovary* oblong or linear-oblong in outline, pubescent, villous, glabrous or glandular; style terete; style-branches linear, truncate, penicillate. *Pappus* of several delicate caducous bristles about as long as the corolla.

Herbs or undershrubs, more or less cano-tomentose or glabrate; leaves alternate, sometimes radical, often broad and incised-toothed, or variously pinnatisect, rarely entire; heads small or medium-sized, in lax corymbs at the apex of the branches.

Described species between 80 and 90, mostly natives of Africa and Madagascar; 37 species recorded from South Africa, widely distributed. (Type: *C. geifolia* L.)

9411 147. SENECIO Linn., Sp. Pl., ed. 1, p. 866 (1753)

(*Calalia* L. partly; *Klenia* L.; *Mesogamma* DC.)

Heads heterogamous, few- to many-flowered, with marginal female (rarely sterile) florets and bisexual fertile disc-florets, or homogamous by the absence of the ray-florets, rarely some disc-florets sterile. *Involucre* cylindric, campanulate or almost hemispherical; bracts in 1 row or sub-2 rows, free or more or less cohering, often keeled on the back or 3-nerved, with a few or many small outer bracts. *Receptacle* flat or somewhat convex, nude, pitted or shortly fimbriate. *Marginal-floret*:—*Corolla* ligulate, sometimes small and revolute, sometimes with an elongated spreading lamina, sometimes scarcely conspicuous. *Ovary* subterete or slightly compressed, ribbed, glabrous or villous. *Pappus* of copious slender scabrid or rarely barbellate bristles, rarely small or absent. *Disc-floret*:—*Corolla* tubular or abruptly narrowly or widely campanulate; lobes 5. *Anthers* obtuse or very shortly sagittate at the base. *Ovary* subterete, ribbed, glabrous or villous; style-branches truncate and penicillate, rarely rounded or produced into a short broad or narrow appendage. *Pappus* of copious slender scabrid or rarely barbellate bristles.

Herbs, undershrubs, or shrubs, rarely arborescent, sometimes succulent, glabrous or variously hairy; stems sometimes articulated; leaves alternate, sometimes

radical, entire or variously cut, rarely leaves rudimentary; heads large, medium-sized, or small, solitary or arranged in corymbs, rarely in panicles, sometimes a solitary head or groups of heads in the forks of the branches or arranged in a racemose manner on the stem.

Described species between 2,000 and 3,000, distributed all over the world, absent from the Arctic and Antarctic regions; about 250 species recorded from South Africa, widely distributed. (Type: *S. vulgaris* L.)

NOTE.—The position of *Kleinia* L. has not been unanimously agreed upon. O. Stapf in 1924 (*Bot. Mag.*, tab. 9030) follows J. D. Hooker and considers it reasonable to keep *Kleinia* separate from *Senecio*. In 1929 the Director of the Royal Botanic Gardens, Kew, considered that when the habit of the world species *Senecio* is considered there is no justification for retaining the genus *Kleinia*. Also, in 1929, J. Hutchinson (*Flowering Plants of South Africa*, pl. 332) was also of the opinion that on habit alone *Kleinia* should not be kept as a genus separate from *Senecio*.—E. P. P.

9416 148. OLIGOTHRIX DC., Prodr., vol. 6, p. 304 (1837)

Heads heterogamous, few-flowered, with marginal female florets and bisexual fertile and sterile disc-florets. *Involucre* campanulate; bracts in 1 row, lanceolate, connate below, glabrous. *Receptacle* flat, nude. *Marginal-floret*:—*Corolla-tube* tubular, about $\frac{1}{2}$ as long as the limb, glabrous; limb elliptic, 3-toothed. *Ovary* terete, oblong in outline, ribbed, pubescent; style linear; style-branches linear, truncate. *Pappus* of a few delicate barbellate caducous bristles. *Disc-floret*:—*Corolla-tube* tubular below, campanulate above, glabrous; lobes 5, ovate, cucullate at the apex, glandular on the back. *Anthems* oblong, obtuse, with an oblong appendage. *Ovary* terete, oblong in outline, ribbed, pubescent; style terete, somewhat swollen at the base; style-branches linear, truncate, penicillate. *Pappus* of a few delicate barbellate caducous bristles.

Glabrous annual herbs; leaves alternate, sessile, linear to linear-spathulate, shortly amplexicaul at the base, sometimes few-toothed above; heads small, penduncled, arranged in a lax panicle at the ends of the stems.

An African genus of 3 species; 1 species in South Africa, recorded from the Clanwilliam and Ceres districts. (Type: *O. gracilis* DC.)

NOTE.—In one head from Esterhuyzen 7228 which I dissected, a few of the disc-florets and 1 ray-floret had an abortive and a normal floret on the same ovary.—E. P. P.

9417 149. EURYOPS Cass., Bull. Soc. Philom., p. 140 (1818)

(*Lysichlamys* Compton; *Thodaya* Compton)

Heads heterogamous, many- to several-flowered, with marginal female florets and bisexual fertile and sterile disc-florets. *Involucre* campanulate; bracts in 1 row, rarely not truly in 1 row, variously connate or almost free, lanceolate, ovate, or linear, sometimes with membranous margins, sometimes leathery, glabrous or villous. *Receptacle* flat, nude. *Marginal-floret*:—*Corolla-tube* 2—5 times shorter than the limb, normally tubular, rarely conical; limb elliptic, obovate, oblong-linear, or broadly linear, obtuse or 3-toothed. *Ovary* compressed or subterete, obovoid or oblong in outline, ribbed, sometimes with a conspicuous conical beak from a discoid base, glabrous or villous; style terete or linear, swollen at the base, sometimes articulated with the beak on the ovary; style-branches linear, truncate or obtuse. *Pappus* of several delicate caducous bristles which are sometimes barbellate, sometimes an outer row reflexed over the ovary. *Disc-floret*:—*Corolla-tube* tubular or cylindric below, widened or campanulate above, rarely conical, glabrous; lobes 5, ovate. *Anthems* linear, blunt, with an ovate appendage. *Ovary* compressed or semi-terete, obovoid or oblong in outline, sometimes with a conical beak from a discoid base, ribbed, glabrous; style terete, swollen at the base, sometimes articulated with the beak of the ovary; style-branches normally linear, more rarely oblong, truncate, penicillate. *Pappus* of several delicate caducous bristles which are sometimes barbellate, sometimes an outer row reflexed over the ovary.

Tall or dwarf shrubs, glabrous or cano-tomentose; leaves alternate, often crowded, rarely radical, long-linear, ericoid, obovate, lanceolate, or flabelliform, entire, incised, pinnatisect, or digitately lobed, glabrous or hairy; heads large to small, on short or long peduncles, terminal or arranged in the leaf-axils; rays yellow.

Between 70 and 80 species described, almost all African; 1 species recorded from Arabia and 1 from the Island of Socotra; 54 species in South Africa widely distributed. (Type: *O. pectinatus* (L.) Cass.)

NOTE.—The only difference between *Euroyops* and *Lysichlamys* is that in the latter the involucre bracts are not truly in 1 row, a character which, in my opinion, is not sufficient to recognize *Lysichlamys* as a genus distinct from *Euroyops*. Prof. Compton was good enough to allow me to examine the specimens of his genus *Thodaya* and in all 1 found that the outer disc-florets were fertile—as stated in the original description; the genus should be sunk under *Euroyops*. In Compton No. 6597, several of the disc-florets had 6 lobes.—E. P. P.

9417a **150. LASIOCOMA** Bolus, Trans. S. Afr. Phil. Soc., vol. 16, p. 390 (1906)

Heads heterogamous, several-flowered, with marginal female florets and bisexual sterile disc-florets. *Involucre* campanulate; bracts in 1 row, connate at the base, ovate, with membranous margins, glabrous. *Receptacle* flat, honeycombed, with the margins of the pits produced into membranous appendages. *Marginal-floret*.—*Corolla-tube* tubular, about $1\frac{1}{2}$ times shorter than the limb, glabrous; limb elliptic, 3-toothed. *Ovary* obovoid, densely covered with long woolly hairs which also envelop the corolla; style terete, slightly swollen at the base; style-branches linear, obtuse. *Pappus* none. *Disc-floret*.—*Corolla-tube* cylindric below, campanulate above, glabrous; lobes 5, ovate. *Anthers* linear, blunt, with an ovate appendage. *Ovary* linear in outline, pubescent; style terete, somewhat discoid at the base; style-branches oblong, truncate, penicillate. *Pappus* of short subbarbellate caducous bristles.

A glabrous shrub; leaves alternate, linear, digitately divided above; heads solitary, peduncled, axillary.

Endemic; species 1, recorded from Namaqualand, the Van Rhynsdorp, Claniwilliam, and Piquetberg districts. (Type: *L. petrophiloides* (DC.) Bolus)

NOTE.—This is the plant described in the *Flora Capensis*, vol. 3, p. 201, as *Eriocephalus petrophiloides* DC.—E. P. P.

9418 **151. GYMNODISCUS** Less., *Linnaea*, vol. 6, p. 95 (1831)

Heads heterogamous, few-flowered, with marginal female florets and bisexual sterile disc-florets. *Involucre* campanulate; bracts in 1 row, free or connate at the base, obovate, elliptic, or lanceolate, distinctly veined. *Receptacle* convex, nude. *Marginal-floret*.—*Corolla-tube* cylindric or tubular, about $2\frac{1}{2}$ times shorter than the limb, glabrous; limb linear or elliptic, obtuse. *Ovary* obovoid or subglobose, glabrous; style linear; style-branches linear, obtuse. *Pappus* of many fine scabrid bristles longer than the corolla-tube, persistent or caducous. *Disc-floret*.—*Corolla-tube* funnel-shaped or cylindric below and subcampanulate above, glabrous; lobes 5, lanceolate. *Anthers* oblong, obtuse, with an oblong appendage. *Ovary* linear; style linear, undivided, truncate, with a conical appendage. *Pappus* none.

Herbaceous annuals, glabrous; leaves radical, sessile, obovate or linear, entire or bluntly lobed; cauline leaves, few and distinct, often amplexicaul at the base; heads small, clustered at the ends of long, almost leafless, scapes.

Endemic; species 3, extending through the coastal belt from Namaqualand to the Riversdale district. (Type: *G. capillaris* (L. fil.) Less.)

9419 **152. RUCKERIA** DC., *Prodr.*, vol. 6, p. 483 (1837)

Heads heterogamous, many-flowered, with marginal female florets and bisexual fertile and sterile disc-florets. *Involucre* campanulate; bracts in

1 row or sub-1 row, free or connate low down, lanceolate, nerved, sometimes ciliate, tomentose or pilose. *Receptacle* flat, nude. *Marginal-floret*:—*Corolla-tube* tubular, about 6 times shorter than the limb, glabrous; limb oblong-elliptic, 3-toothed. *Ovary* somewhat compressed or terete, ellipsoid or obovate in outline, ribbed, glandular-tomentose on the face and margins or hairy all over; style terete; style-branches linear and subobtuse or lanceolate and obtuse. *Pappus* of delicate scabrid caducous bristles. *Disc-floret*:—*Corolla-tube* tubular below, widening above, glabrous; lobes 5, ovate, somewhat cucullate at the apex. *Anthers* linear, obtuse, with an ovate appendage. *Ovary* ellipsoid or linear in outline, ribbed, glandular-pubescent; style terete; style-branches oblong, subtruncate, penicillate. *Pappus* of delicate scabrid caducous bristles.

Acaulescent shrubs 2—6 inches high; leaves alternate, sometimes radical, pinnately divided, with the segments linear and sometimes pungent; young leaves tomentose, at length glabrous; heads on short or long peduncles which are woolly near the base, solitary, terminal; rays yellow.

Endemic; species 3, only recorded from the Clanwilliam district. (Type: *R. tagetoides* DC.)

NOTE.—In a specimen (Lewis in Herb. S. Afr. Museum 57734) a disc-floret was seen with 3 style-branches. It is doubtful whether there is justification for recognizing 3 species; they appear to be merely growth forms.—E. P. P.

9420

153. OTHONNA Linn., Sp. Pl., ed. 1, p. 924 (1753)

(Doria Less. partly)

Heads heterogamous, many-flowered, with marginal female florets and bisexual sterile disc-florets (in a few species there is an outer row of disc-florets differing in structure from the inner disc-florets). *Involucre* campanulate; bracts in 1 row, connate below, ovate, or elliptic-lanceolate, sometimes with membranous margins, usually leathery, glabrous. *Receptacle* convex, nude. *Marginal-floret*:—*Corolla-tube* tubular, from slightly longer up to 4 times shorter than the limb, glabrous; limb obovate-elliptic, elliptic, oblong, linear, or more rarely quadrate, obtuse or 2—3-toothed. *Ovary* oblong in outline, ribbed, densely pubescent, sometimes also glandular; style linear; style-branches linear, obtuse. *Pappus* of many scabrid bristles, as long as the corolla-tube, rarely of short caducous bristles. *Disc-floret*:—*Corolla* tubular, widening upwards or cylindric below and campanulate above (rarely, in some outer florets, a truncate tube), sometimes with a short ligule or tube scarcely developed; lobes 5, ovate. *Anthers* linear, obtuse, with an ovate appendage. *Ovary* linear, ribbed, glabrous; style linear, undivided, with a conical or almost globose appendage at the apex, rarely minutely bifid. *Pappus* of many persistent scabrid bristles, normally as long as the corolla, rarely shorter, rarely of short caducous bristles.

Shrubs, undershrubs, or herbs, dwarf or tall, sometimes with underground thickened stems or corms, sometimes fleshy or tuberculate, normally glabrous; leaves alternate, sometimes radical, sessile or petioled, entire, toothed, or lobed, sometimes pinnatisect, sometimes amplexicaul or perfoliate, varying in shape from narrow-linear to orbicular; heads large or small, solitary or in corymbs or panicles, terminal or axillary, shortly peduncled or on long peduncles; rays yellow.

An African genus of between 140 and 150 species; 102 species recorded from South Africa, widely distributed. (Type: *O. coronopifolia* L.)

9421

154. GAMOLEPIS Less., Synops. Compos., p. 251 (1832)

Heads heterogamous, many-flowered, with marginal female florets and bisexual fertile disc-florets, or some sterile. *Involucre* campanulate; bracts

in 1 row or sub-2-seriate, connate low down, ovate or lanceolate, sometimes acuminate, ribbed, glabrous. *Receptacle* convex, honeycombed, with the margins of the pits sometimes produced. *Marginal-floret*:—*Corolla-tube* none or tubular, up to 4 times shorter than the limb, glabrous; limb obovate-oblong, broadly linear, or elliptic, subacute or 3—4-toothed. *Ovary* subglobose or ellipsoid, ribbed, sometimes tuberculate, glabrous; style linear, swollen at the base; style-branches linear, obtuse. *Pappus* none. *Disc-floret*:—*Corolla-tube* tubular below, widening or campanulate above, glabrous; lobes 5, ovate or lanceolate. *Anthers* linear, blunt, with a lanceolate appendage. *Ovary* ellipsoid, obovate, or oblong in outline, sometimes tuberculate; style linear, sometimes swollen at the base; style-branches linear, truncate, penicillate. *Pappus* none.

Woody shrubs up to 18 inches high; leaves alternate, sometimes crowded, pin-natilobed with broad or narrow lobes or digitately cut with linear segments or entire or linear or ericoid and toothed, rarely subfleshy, glabrous; heads solitary and terminal on long or short peduncles or sometimes sessile; rays yellow.

Endemic; species 13, recorded from Bredasdorp district, through the coastal belt to Natal and the northern Transvaal; also recorded from the Somerset East, Albany, Prince Albert, Graaff-Reinet, Steytlerville and Jansenville districts. (Type: *G. pectinata* Less.)

9421a **155. PSILOTHONNA** E. Mey., ex DC., Prodr., vol. 1, p. 40 (1837)
(*Steirodiscus* Less.)

Heads heterogamous, many- or few-flowered, with marginal female florets and bisexual fertile or sterile disc-florets. *Involucre* campanulate, ovoid or subglobose; bracts fused to form a many-toothed cup or bracts free to the base, ribbed, glabrous. *Receptacle* convex or conical, nude. *Marginal-floret*:—*Corolla-tube* from 2 to 4 times shorter than the limb, glandular-pubescent or with a few glands at the junction of the tube and limb; limb obovate-oblong, broadly linear or oblong, obtuse or 3-toothed. *Ovary* linear or oblong in outline, flat on the back with 2 ridges on the face or ribbed, sometimes sculptured, villous or glabrous; style linear or terete, more or less swollen at the base; style-branches linear, obtuse. *Pappus* none. *Disc-floret*:—*Corolla-tube* tubular below, campanulate or gradually or abruptly widening above, glabrous; lobes 5, ovate or lanceolate. *Anthers* linear or oblong, blunt at the base, with a lanceolate or linear appendage. *Ovary* oblong or linear in outline, ribbed, sometimes sculptured, villous or glabrous; style terete or linear; style-branches linear, truncate, penicillate, or with a distinct appendage. *Pappus* none.

Glabrous annual herbs, 6—12 inches high; leaves alternate, linear, pinnatisect, with the lobes linear; heads solitary, peduncled, arranged in a lax corymb or panicle, rarely only 1 terminal head present.

Endemic; species 2, recorded from the Cape, Stellenbosch, Darling, and Piquet-berg districts. (Type: *P. tagetes* (Linn.) DC.)

9425 **156. DIMORPHOTHECA** Vaill., ex Moench, Meth. Pl., p. 585
(1794)

(*Dimorphotheca* in Fl. Cap. ex parte)

Heads heterogamous, many-flowered, with marginal female florets and bisexual fertile disc-florets. *Involucre* campanulate; bracts in 1 row or sub-2 rows, free, linear, acuminate, sometimes with membranous margins, sometimes ciliate, glandular or villous. *Receptacle* flat or somewhat convex, nude. *Marginal-floret*:—*Corolla-tube* tubular or cylindric, 4 to 8 times shorter than the limb, scantily woolly or with glandular hairs; limb long-linear,

obovate-linear or obovate-oblong, obtuse or 3-toothed. *Staminodes* often present. *Ovary* terete, obovoid, or oblong in outline, often 3-angled, sometimes winged, usually tuberculed, glabrous; style linear; style-branches linear, obtuse. *Pappus* none. *Disc-floret*:—*Corolla-tube* tubular, gradually widening upwards, with scattered glandular hairs; lobes 5, lanceolate, sometimes with a foot-like appendage. *Anthers* linear, shortly sagittate, with a lanceolate or ovate appendage. *Ovary* usually biconvex in cross-section, elliptic, linear, obovate-oblong or obovate in outline, with a narrow marginal wing, sometimes with a few glands, glabrous; style linear, sometimes discoid at the base; style-branches linear-oblong, obtuse. *Pappus* none. *Achenes* of rays 3-angled or subterete, or rarely 3-winged, straight or slightly incurved, smooth or often rugose or tuberculed. *Achenes* of disc smooth, not flat, with thickened margins, obcordate, obovate, suborbicular, or elliptic.

Herbs, subshrubs, or shrubs, erect or ascending or rarely prostrate, glabrous or pilose, with the hairs often glandular; leaves alternate, entire, toothed, sinuate, pinnatifid, or pinnatipartite; rays white above and coloured beneath or yellow above and beneath.

An African genus of 7 species, all of which occur in the Union and are widely distributed, but not recorded from Natal; 1 species found in Angola. (Type: *D. pluvialis* (L.) Moench)

NOTE.—In a specimen (Marloth 10703) examined, one disc-floret had 3 style-branches.—E. P. P.

9425a **157. CASTALIS** Cass., Dict. Sc. Nat., vol. 30, p. 331 (1824)

(*Dimorphotheca* of Fl. Cap. *ex parte*)

Heads heterogamous, many-flowered, with marginal neuter florets and bisexual fertile disc-florets. *Involucre* campanulate; bracts in sub-2 rows, linear-lanceolate, sometimes acuminate, with submembranous margins, sometimes ciliate, glabrous or glandular. *Receptacle* flat or slightly convex, nude. *Marginal-floret*:—*Corolla-tube* tubular, about 5 to 10 times shorter than the limb, glandular-pilose, limb long-linear; pilose near the base, 3-toothed. *Staminodes* often present, 4 or 5. *Ovary* oblong in outline, 3-angled, narrowly winged or tuberculed on the angles, glabrous; style none or linear and undivided or bifid. *Pappus* none. *Disc-floret*:—*Corolla-tube* tubular, gradually widening upwards, glandular-pilose or glandular-pubescent; lobes 5, lanceolate. *Anthers* linear, shortly sagittate or tailed, with an ovate appendage. *Ovary* biconvex in cross-section, more or less obcordate, with a marginal wing, glabrous; style terete; style-branches oblong, obtuse. *Pappus* none.

Herbs, sometimes from a woody rootstock, or ascending, glabrous or glandular-pilose; leaves alternate, flat, entire, toothed, sinuate or pinnatifid; heads large, solitary, peduncled.

Endemic; species 3, distributed from Namaqualand, through the coastal area to the Knysna and Uniondale districts; 1 record from the Transvaal. (Type: *C. tragus* (Ait.) Norl.)

9426 **158. GARULEUM** Cass., in Bull. Soc. Philom., p. 172 (1819)

Heads heterogamous, many- or several-flowered, with marginal female florets, and bisexual sterile disc-florets. *Involucre* campanulate; bracts in 2 rows, ovate, lanceolate, linear, or linear-lanceolate, sometimes reflexed, sometimes pungent, usually ciliate, pilose, woolly, or glandular. *Receptacle* convex, nude. *Marginal-floret*:—*Corolla-tube* cylindric or tubular, about as long as or from $1\frac{1}{2}$ to 3 times shorter than the limb, glandular; limb linear or oblong, 3-toothed. *Ovary* obovoid or obovate in outline, compressed or

more or less 3-angled, sometimes tuberculed on the margins, glandular or glabrous; style linear; style-branches linear, subacute. *Pappus* none. *Disc-floret*:—*Corolla-tube* tubular below, subcampanulate above, glandular, lobes 5, lanceolate, sometimes hairy on the back. *Anthers* linear, faintly eared, with an ovate appendage. *Ovary* linear, or obovate-linear in outline, compressed or 4-angled, sometimes narrowly winged, glabrous; style terete or linear, glandular-hairy below the style-branches; style-branches lanceolate, glandular-hairy on the outer surface. *Pappus* none.

Woody shrubs, sometimes viscid or pilose; leaves alternate, pinnatifid, or toothed, sometimes the teeth or lobes pungent, sometimes scabrid; heads terminal, peduncled; rays blue, disc yellow.

Endemic; species 8, recorded from South West Africa, the Transvaal, Zululand, Natal, Basutoland, the Orange Free State to the Komgha district; also recorded from the Van Rhynsdorp and the north-western and central districts of the Cape Province; one record from the Swellendam district. (Type: *G. pinnatifolium* (L'Hérit.) DC.)

9427 159. **OSTEOSPERMUM** Linn., Sp. Pl., ed. 1, p. 923 (1753)

(*Tripteris* Less.; *Oligocarpus* Less.; *Xenismia* DC.)

Heads heterogamous, several- to many-flowered, with marginal female florets and bisexual sterile disc-florets. *Involucre* campanulate, sub-hemispherical, or turbinate; bracts in sub-1 row or in 4 rows, free, ovate, lanceolate, or linear, sometimes apiculate, sometimes with membranous margins, glandular or pubescent, or glabrous. *Receptacle* flat or slightly convex, nude. *Marginal-floret*:—*Corolla-tube* scarcely developed, then from $2\frac{1}{2}$ to 6 times shorter than the limb, pilose, or with a few glandular hairs; limb oblong, elliptic, or oblong-obovate, 3-toothed. *Staminodes* sometimes present. *Ovary* elliptic, oblong, or oblong-linear in outline, or terete, or 3-angled and narrowly winged, usually glabrous or sometimes glandular on upper part; style linear; style-branches linear, obtuse. *Pappus* 0. *Disc-floret*:—*Corolla-tube* tubular, widening upwards, glandular-hairy or glabrous; lobes 5, lanceolate. *Anthers* linear, shortly tailed, with an ovate appendage. *Ovary* linear-oblong in outline; style terete or linear, usually undivided, conical, capitate, or subglobose, sometimes shortly bifid, with a ring of glandular hairs, rarely oblong with a lanceolate appendage. *Pappus* 0. *Mature achene* variously shaped, straight or slightly curved, terete or often 3-angled or 3—6—9-ribbed, smooth, rugose, tuberculed, and with various processes, sometimes winged, sometimes with a cavity, rarely beaked.

Herbs, subherbs, or shrubs, erect, ascending or prostrate, glabrous or variously hairy; leaves alternate, rarely opposite, entire, variously divided, often sinuate, toothed, serrated, pinnatifid or pinnatipartite; heads peduncled, usually terminal and solitary; rays yellow or golden, rarely violet or white above and violet beneath.

Species 67, all but one African, about half of which occur in the south-western districts of the Cape Province and the others generally distributed; 1 species occurs outside Africa; 1 species recorded from St. Helena and 2 species in tropical Africa. (Type: *O. spinosum* L.)

9427a 160. **GIBBARIA** Cass., Bull. Sc. Soc. Phil., p. 139 (1817)

(*Osteospermum* of Fl. Cap. partly)

Heads heterogamous, several- to many-flowered, with marginal female florets and bisexual sterile disc-florets. *Involucre* campanulate; bracts in 2 rows, free, lanceolate, acuminate, acute, glandular, setose or pilose. *Receptacle* flat or convex, nude. *Marginal-floret*:—*Corolla-tube* situated obliquely on the ovary, funnel-shaped, about 4 to 8 times shorter than the

limb, glandular-hairy; limb elliptic or oblong-elliptic, 3-toothed. *Staminodes* sometimes present. *Ovary* more or less kidney-shaped, convex and ribbed or transversely rugose on one side, subkeeled on the reverse side with a lateral cavity on each side of the keel, glabrous; style terete; style-branches linear, obtuse. *Pappus* none. *Disc-floret*:—*Corolla-tube* cylindric below, appreciably widening above, sparsely glandular; lobes 5, ovate. *Anthers* linear, tailed, with an ovate appendage. *Ovary* oblong in outline, glabrous; style linear, undivided, glandular convex and faintly 2-lobed at the apex, with a ring of glandular hairs at the base of the convex part. *Pappus* none. *Achene* kidney-shaped, convex and transversely rugose on the convex side, keeled on the reverse side with a cavity on each side of the keel, glabrous.

Woody shrubs; leaves alternate, sessile, scabrid, linear to lanceolate and elliptic, sometimes remotely toothed; heads shortly peduncled, terminal, solitary; rays yellow or golden.

Endemic; species 2, distributed from the Cape districts through the coastal belt to the Uitenhage district. (Type: *G. scabra* (Thunb.) Norl.)

NOTE.—*Osteospermum illicifolium* Linn., *O. scabrum* Thunb. and *Gibbaria bicolor* Cass., of the *Flora Capensis* belong to this genus.—E. P. P.

9427b

161. **CHRYSANTHEMOIDES** Tourn. ex Medik., Phil. Bot., vol. 1, p. 159 (1789)

(*Osteospermum* of Fl. Cap. partly)

Heads heterogamous, many-flowered, with marginal female florets and bisexual sterile disc-florets. *Involucre* campanulate; bracts in 2—4 rows, free, linear, lanceolate or ovate-lanceolate, subacuminate, acute, glabrous or woolly. *Receptacle* flat or somewhat convex, nude. *Marginal-floret*:—*Corolla-tube* tubular or scarcely developed, up to $4\frac{1}{2}$ times shorter than the limb, glandular-pilose; limb elliptic or oblong-elliptic, 3-toothed. *Staminodes* sometimes present. *Ovary* oblong in outline, 3—6-angled, sometimes glandular at the apex, otherwise glabrous; style linear; style-branches sometimes slightly longer than the style, linear, obtuse. *Pappus* 0. *Disc-floret*:—*Corolla-tube* funnel-shaped, glandular-hairy; lobes 5, lanceolate. *Anthers* linear, shortly tailed, with an ovate appendage. *Ovary* linear or oblong in outline, 3-angled, glabrous; style terete, undivided, subconical and minutely bifid, glandular. *Pappus* none. *Fruit* a drupe; endocarp hard, globose, obovoid, ellipsoid, subcylindric, smooth, or more or less with raised nerves.

Unarmed or spinescent shrubs, glabrous or more or less cobwebby; leaves alternate, mostly obovate, narrowed into a petiole, entire, serrated or toothed; heads shortly petioled, usually a few together or solitary; rays yellow.

An African genus of 2 species, widely distributed. (Type: *C. monilifera* (L.) T. Norl.)

NOTE.—*Osteospermum moniliferum* L. of the *Flora Capensis* belongs to this genus.—E. P. P.

9431

162. **URSINIA** Gaertn., Fruct., vol. 2, p. 462, t. 174 (1791)

(*Sphenogyne* R. Br.)

Heads heterogamous, many-flowered, with marginal neuter florets, bisexual fertile and sterile disc-florets. *Involucre* campanulate; bracts in 5—7 rows, free, ovate, oblong, elliptic; outer usually with brown margins; inner or all with membranous apices; all sometimes with membranous margins, glabrous. *Receptacle* flat or convex, honeycombed, paleate; paleae as long as and enveloping the disc-florets, oblong or almost quadrate, sometimes with an ovate appendage, membranous, sometimes glandular. *Marginal-floret*:—*Corolla-tube* linear, from $2\frac{1}{2}$ to 10 times shorter than the limb, sometimes

with a few glandular hairs above, otherwise glabrous; limb oblong, linear-oblong, or linear, rounded or 2—3-toothed, sometimes glandular on back. *Ovary* and *style* none. *Pappus* none. *Disc-floret*.—*Corolla-tube* funnel-shaped or tubular, with a few scattered glands, or glabrous; lobes 5, lanceolate, sometimes with an appendage at the back below the apex, sometimes with marginal glands. *Anthers* linear, blunt, with an ovate appendage. *Ovary* ellipsoid, obovoid, or oblong in outline, glabrous or with a tuft of long hairs at the base; style terete; style-branches linear, truncate, penicillate. *Pappus* of a few hyaline obovate scales, longer or shorter than the ovary, which envelop one another and are sometimes finely fimbriate, sometimes with an inner pappus of a few bristles.

Annual or perennial herbs or shrubby; leaves alternate, serrate, pinnatifid, or often pinnatisect; heads medium-sized, large or rarely small, long- or rarely shortly peduncled at the apices of the branches, or laxly panicle.

An African genus of about 80 species; about 70 species described from South Africa, the majority recorded from the coastal districts; also found in South West Africa, the Transvaal, Basutoland, and Natal. (Type: *U. paradoxa* Gaertn.)

NOTE.—N. E. Brown in the *Gardeners' Chronicle*, vol. 1, ser. 3, p. 670 (1887), sank the genus *Sphenogyne* R. Br. under *Ursinia* Gaertn. O. Stapf in *Botanical Mag.*, under tab. 9317 (1933), makes out a case for keeping the two genera separate.—E. P. P.

9431a

163. URSINIOPSIS Phillips gen. nov.

Capitula heterogama, radiata, floribus radii sterilibus vel fertilibus, floribus disci fertilibus. *Receptaculum* planum, paleis membranaceis flores disci involventibus onustum. *Involutrum* campanulatum, bracteis 4—7 seriatis; bracteae lanceolatae vel oblongae, interioribus apice membranaceae. *Tubus corollae* radii tubulosus, glaber vel apice glandulosus; limbus linearis vel oblongo-linearis, 3-dentatus. *Ovarium* oblongum vel lineare, costatum, glabrum; stylus simplex vel divisus. *Pappi* paleae hyalinae. *Tubus corollae* disci tubulosus, glaber; lobi 5, lanceolati vel ovati, apice cucullati. *Antherae* basi obtusae, apice appendiculatae. *Ovarium* lineare vel oblongum, costatum, glabrum; stylus linearis vel teres; styli rami oblongi vel lineare-oblongi, apice truncati, penicillati. *Pappi* paleae hyalinae.

Frutices glabri ad 7 ped. alti; folia alterna, sessiles, lanceolata, oblanceolata, oblonga, vel lineares, integra vel apice divisa; capitula majuscula pedunculata vel subsessiles, solitaria vel laxe corymbosa. (Typus: *U. caledonica* Phill.)

Heads heterogamous, many-flowered, with marginal female, sterile or fertile florets, and bisexual fertile disc-florets. *Invulcre* campanulate; bracts in 4—7 rows, lanceolate or oblong; outer with brown margins; inner with a membranous appendage. *Receptacle* flat, paleate; paleae oblong, sometimes irregularly 3-lobed, enveloping the disc-florets, membranous. *Marginal-floret*.—*Corolla-tube* tubular, 5—6 times shorter than the limb, glabrous or glandular above; limb long-linear or oblong-linear, 3-toothed. *Ovary* oblong or undivided; style-branches (when present) linear, obtuse. *Pappus* of hyaline scales, shorter than the ovary. *Disc-floret*.—*Corolla-tube* tubular or funnel-shaped, glabrous; lobes 5, lanceolate or ovate, cucullate at the apex. *Anthers* linear, blunt, with an ovate appendage. *Ovary* linear or oblong in outline, ribbed, glabrous, sometimes with fine long hairs from the base; style linear or terete; style-branches oblong or linear-oblong, truncate, penicillate. *Pappus* of hyaline scales, shorter than the ovary.

Woody, glabrous shrubs up to 7 ft. high; leaves alternate, sessile, lanceolate, oblanceolate, or oblong, sometimes linear, entire or digitately lobed at the apex; heads peduncled or subsessile, terminal or in the axils of the upper leaves, solitary or arranged in a corymb; rays yellow.

Endemic; species 3, only recorded from the Caledon district.

NOTE.—In the genera *Ursinia* and *Sphenogyne* the ray-florets are neuter and neither an ovary nor a style is developed. In *Ursinopsis* the ray-florets are female, but may be either fertile or sterile; in general habit the 3 species of *Ursinopsis* also differ from *Ursinia*. I am indebted to Mr. B. de Winter who examined the specimens at Kew for me and forwarded the following information. Mr. de Winter pointed out that de Candolle recognized 2 of the plants as distinct from *Ursinia* and had given them the generic name of *Chronobasis* but published no description; the name was taken over by Benthams and Hooker fil. (*Gen. Plant.* vol. 2, p. 457 (1873)) but also without description. The synonymy is as follows:—

Ursinopsis Phillips.—*Chronobasis* DC. nomen ex Benth. et Hook f. in *Gen. Plant.* vol. 2, p. 457 (1873); *Sphenogyne* in *Alt. Hort. Kew.* ed. 2, vol. 5, p. 142 (1813) pro parte; *Ursinia* sensu N. E. Br. in *Gard. Chron.*, vol. 1, p. 670 (1887) pro parte.

The species are as follows:—

1. *U. eckloniana* (Sond.) Phill. comb. nov. *Sphenogyne eckloniana* Sond. in *Linn.*, vol. 23, p. 64 (1850); *Ursinia eckloniana* (Sond.) N. E. Br. in *Gard. Chron.*, vol. 1, p. 670 (1887).
2. *U. quinquepartita* (DC.) Phill. comb. nov. *Sphenogyne quinquepartita* DC., *Prodr.*, vol. 5, p. 686 (1836); *Ursinia quinquepartita* (DC.) N. E. Br. in *Gard. Chron.*, vol. 1, p. 670 (1887); *Chronobasis quinquepartita* nomen in *Fl. Cap.*, vol. 3, p. 146 (1865); *C. tripartita* nomen, loc. cit., p. 147; *Sphenogyne tripartita* DC. *Prodr.*, vol. 5, p. 682 (1836); *Ursinia tripartita* N. E. Br., in *Gard. Chron.*, vol. 1, p. 670 (1887).
3. *U. caledonica* Phill. sp. nov. *Ovarium* flores radii fertile; folia ovata, apice 3-lobata; -capitula subsessile solitaria. (Type: Esterhuysen No. 2654, 2649)—E. P. P.

9432

164. ARCTOTIS Linn., Sp. Pl., ed. 1, p. 922 (1753)

(Section *Euarctotis* of Fl. Cap.)

Heads heterogamous, many-flowered, with marginal female florets and bisexual fertile disc-florets. *Involucre* campanulate; bracts in 5—6 rows, ovate, elliptic or linear, sometimes acuminate or with leafy apices, sometimes thickened at the base, often with membranous margins, sometimes ciliate with multicellular hairs, glabrous or sometimes glandular. *Receptacle* flat, honeycombed, with the margins of the pits produced into long-linear processes. *Marginal-floret*:—*Corolla-tube* compressed, oblong-linear, $4\frac{1}{2}$ to 6 times shorter than the limb, glabrous or sometimes glandular; limb linear, sometimes glandular on the back, 3-toothed. *Staminodes* often present. *Ovary* oblong in outline, ribbed, sometimes transversely rugose, with 2 linear cavities on the back, glabrous or pubescent, with a tuft of long hairs from the base; style linear or terete, often globose or swollen at the base, thickened above; style-branches linear-lanceolate, lanceolate or elliptic. *Pappus* of 5—10 hyaline scales as long as the corolla-tube. *Disc-floret*:—*Corolla-tube* funnel-shaped or tubular below and suddenly widening above, glabrous or sometimes glandular; lobes 5, lanceolate, with or without a blunt protuberance at the back of the apex, usually glandular. *Anthers* linear, shortly eared, with an ovate appendage. *Ovary* oblong in outline, glabrous, with a basal tuft of hairs; style terete, thickened and cylindric above, sometimes with a thickened ring at the base of the cylindric portion, shortly 2-fid. *Pappus* of delicate hyaline scales scarcely longer than the ovary.

Herbs, sometimes almost stemless, more or less cano-tomentose, woolly or glandular; leaves alternate, sessile or petioled, sometimes radical, entire, sinuate-toothed, or pinnatisect; heads large, solitary, peduncled; rays white, yellow or bluish.

An African genus of over 100 species but probably not all valid; 1 or 2 recorded from Australia; 54 species recorded from South Africa, widely distributed. (Type: *A. augustifolia* L.)

9432a

165. VENIDIUM Less., Linnaea, vol. 6, p. 91 (1831)

Heads heterogamous, few- to many-flowered, with marginal female florets and bisexual fertile and sterile disc-florets. *Involucre* campanulate; bracts in 3—5 rows; outer bracts linear or lanceolate-linear, often ciliate, glandular or cobwebby; inner bracts oblong-lanceolate, sometimes almost quadrate in outline, sometimes with membranous margins, sometimes glandular. *Receptacle* flat, honeycombed, with the margins of the outer pits sometimes produced into filiform processes. *Marginal-floret*:—*Corolla-tube* compressed,

tubular, about $1\frac{1}{2}$ —6 times shorter than the limb, sometimes glandular; limb oblong or linear, 3-toothed. *Staminodes* 4, often present. *Ovary* obovoid or obovate, elliptic or oblong in outline, sometimes transversely rugose on the inner face, with 2 cavities on the back, sometimes convex on the face and flat on the back, glabrous, without a tuft of hairs from the base; style terete, often slightly swollen at the base; style-branches lanceolate. *Pappus* of 3—4 minute unilateral hyaline scales, or none. *Disc-floret*:—*Corolla-tube* campanular or tubular below and widened above, sparsely glandular; lobes 5, ovate-lanceolate. *Anthers* linear, shortly sagittate, with an ovate appendage. *Ovary* oblong in outline, glabrous, without a tuft of hairs at the base; style terete, thickened and cylindric above, 2-fid or more rarely 2-lobed, with a slight collar at the base of the cylindric portion. *Pappus* of 3—4 minute hyaline scales, or none.

Perennial herbs, cano-tomentose or woolly; leaves alternate, sometimes radical, sessile or petioled, entire, sinuate-toothed or pinnatisect, sometimes pale beneath; heads large or small, solitary, terminal peduncled.

Endemic; species between 20 and 30, found chiefly in the coastal districts from Namaqualand to Natal. (Type: *V. perfoliatum* (Thunb.) Less.)

9432b 166. HAPLOCARPHA Less., *Linnaea*, vol. 6, p. 90 (1831)

Heads heterogamous, many-flowered, with marginal female florets and bisexual fertile disc-florets. *Involucre* campanulate; bracts in 8 rows, ovate to oblong, nerved, glabrous. *Receptacle* flat, nude. *Marginal-floret*:—*Corolla-tube* tubular, 3—5 times shorter than the limb, long-pilose at the base; limb linear or linear-oblong, sometimes glandular on the back, 3-toothed. *Staminodes* sometimes present. *Ovary* obovoid or obovate in outline, densely long-pilose or long-pilose from the base; style linear, thickened or cylindric above; style-branches lanceolate. *Pappus* of several linear acuminate scales longer than the corolla-tube or up to $\frac{1}{3}$ as long as the corolla-limb. *Disc-floret*:—*Corolla-tube* tubular, not evidently widening above, glandular, glabrous; lobes 5, oblong-lanceolate, sometimes horned at the back of the apex. *Anthers* linear, sagittate at the base, with an ovate appendage; filaments thickened, minutely tuberculate. *Ovary* oblong in outline, densely long-villous; style terete, thickened and cylindric above, shortly 2-lobed. *Pappus* of linear or linear-lanceolate long-acuminate scales almost as long as the corolla.

Perennial woolly herbs with stout cylindric roots and usually a woody root-stock; leaves radical, alternate, sessile or narrowed into a petiole, lanceolate, elliptic, obovate, or almost orbicular, entire or pinnately lobed, or lyrate, crenate or toothed, woolly beneath; heads solitary, terminal, peduncled; rays yellow.

Species 4, all found in South Africa and extending from the south-western and south-eastern districts of the Cape Province to Natal, Basutoland, the Transvaal, and Bechuanaland; 1 species extends into tropical Africa. (Type: *H. lanata* Less.)

9432c 167. LANDTIA Less., *Synops. Compos.*, p. 37 (1832)

Heads heterogamous, few-flowered, with marginal female florets and bisexual fertile disc-florets. *Involucre* narrowly campanulate; bracts in 2 rows; outer elliptic-oblong, produced at the apex into a long green appendage, densely glandular-pilose without; inner oblong. *Receptacle* slightly convex, honeycombed, with the margins of the pits slightly produced. *Marginal-floret*:—*Corolla-tube* cylindric or tubular, $2\frac{1}{2}$ to 4 times shorter than the limb, glabrous; limb elliptic or oblong-elliptic, rounded at the apex. *Staminodes* present. *Ovary* elliptic or oblong in outline, usually transversely rugose, with a ring of hairs at the base, otherwise glabrous; style linear; style-branches lanceolate or linear-lanceolate. *Pappus* of linear hyaline scales

shorter than the ovary. *Disc-floret*.—*Corolla-tube* tubular below, campanulate above, glabrous; lobes 5, oblong. *Anthers* linear, sagittate at the base, with an ovate appendage. *Ovary* ellipsoid or elliptic in outline; often transversely rugose, with a ring of hairs at the base, otherwise glabrous; style terete or flattened, thickened and bifid above, with more or less of a collar at the base of the thickened portion. *Pappus* of linear hyaline scales, shorter than the ovary.

Stemless perennial herbs, usually from a short woody rootstock and with stout cylindric roots; leaves radical, sinuate-toothed or lyrate-pinnatifid, albo-tomentose or woolly usually only on the under surface; heads medium-sized, subsessile between the leaves or with short leaves on the scape.

An African genus of 4 species; 2 species found in South Africa, recorded from the Cape to the Kingwilliamstown district; also from the Albany district. Type: *L. hirsuta* Less.)

9432d 168. ARCTOTHECA Wendl., Hort. Herrenhus., p. 8, t. 6 (1789)
(*Cryptostemma* R. Br., *Microstephium* Less.)

Heads heterogamous, many-flowered, with female neuter florets and bisexual fertile disc-florets. *Involucre* campanulate; bracts in 3—6 rows, oblong or oblong-linear, sometimes acuminate, glabrous or cobwebby. *Receptacle* flat, nude. *Marginal-floret*.—*Corolla-tube* flattened, 2—8 times shorter than the limb, glabrous; limb broadly linear, obovate or obovate-oblong, 3-toothed. *Staminodes* sometimes present. *Ovary* linear, oblong, or elliptic in outline, glabrous or hairy; style not developed. *Pappus* none or of several scales or crown-like. *Disc-floret*.—*Corolla-tube* funnel-shaped or narrowly campanulate, glandular or glabrous; lobes 5, lanceolate, usually with a blunt process at the back of the apex. *Anthers* linear, sagittate at the base, with an ovate appendage. *Ovary* obovoid, or linear or obovate in outline, glabrous or pilose; style terete or subterete, thickened above, sometimes intrude at the base of the cylindric portion, or with a collar at the base of the cylindric portion, 2-fid. *Pappus* of hyaline ciliate scales, or a crown of membranous scales, or none.

Caulescent or stemless perennial herbs, sometimes creeping or decumbent; leaves alternate, petioled, lyrate-pinnatifid, rarely undivided, white woolly beneath; heads solitary, peduncled, terminal or axillary.

Species about 6, natives of Africa and Australia; 4 species in South Africa, extending from the Cape to Natal. (Type: *A. repens* Wendl.)

9433 169. GORTERIA Linn., Syst., ed. 10, p. 1229 (1759)

Heads heterogamous, several-flowered, with marginal neuter florets and bisexual fertile disc-florets, or the inner sterile. *Involucre* ovoid; bracts in 5—8 rows, connate into a cup below, linear, acuminate, pungent, ciliate. *Receptacle* basin-shaped, nude, honeycombed, with the margins of the pits produced. *Marginal-floret* inserted on the side of the basin-shaped receptacle. *Corolla-tube* 0; limb elliptic or linear, narrowed into a long claw, 2—3-toothed. *Ovary* and style absent. *Disc-floret* situated on the floor of the basin-shaped receptacle. *Corolla-tube* tubular, slightly widened above, glabrous; lobes 5, lanceolate or linear. *Anthers* linear, shortly sagittate at the base, with an ovate appendage. *Ovary* semi-orbicular, densely pilose, sometimes pilose on the upper half only; style linear, subglobose at the base; style-branches lanceolate or linear-lanceolate; style of innermost florets undivided. *Pappus* a ring of minute hyaline scales or a cup which is long-ciliate or a narrow crown, or of a few narrow-linear setae.

Annual, subherbaceous, 2—9 inches high, glabrous or pilose, sometimes branched from the base, often with the remains of an old involucre from which the

plant springs; leaves alternate, sometimes radical, sessile, linear, lanceolate, or long-linear, entire or lobed, woolly beneath, sometimes rigidly setose; heads solitary, terminal or axillary, subsessile; rays yellow or orange, purple or green beneath.

Endemic; species 4, recorded from South West Africa, Namaqualand and through the coastal area to the Humansdorp district; also recorded from the Kenhardt and Calvinia districts. (Type: *G. personata* L.)

9434 **170. GAZANIA** Gaertn., Fruct., vol. 2, p. 451, t. 173 (1791)

Heads heterogamous, few- to many-flowered, with neuter marginal florets and bisexual fertile disc-florets, or the inner sterile. *Involucre* campanulate; bracts in 2—4 rows, connate for $\frac{1}{2}$ or $\frac{3}{4}$ of their length to form a cup which is usually intruse at the base; free portion ovate to lanceolate, sometimes long-acuminate, glabrous. *Receptacle* somewhat convex or conical, nude. *Marginal-floret*:—*Corolla-tube* flattened, 2—3 times shorter than the limb, glabrous; limb obovate or oblong-elliptic, 3—4-toothed. *Staminodes* sometimes present. *Ovary* and *style* not developed. *Disc-floret*:—*Corolla-tube* tubular, sometimes angled, gradually widening upwards, glabrous; lobes 5, lanceolate or linear-lanceolate. *Anthers* linear, shortly sagittate, with an ovate or lanceolate appendage. *Ovary* oblong or linear-oblong in outline, densely villous with long hairs which may reach up to $\frac{3}{4}$ the length of the corolla; style terete, thickened and cylindric above; style-branches linear, linear-lanceolate, or linear-oblong; style of innermost florets usually not divided. *Pappus* of delicate narrow-linear usually acuminate scales almost $\frac{1}{2}$ as long as the corolla-tube, more rarely 3 times shorter.

Perennial herbs, rarely annuals, sometimes dwarf, often caespitose, usually with a woody rootstock and a long tap-root; leaves alternate, often radical, sessile or narrowed into a petiole, rarely with a distinct petiole, linear, linear-lanceolate, oblanceolate, spatulate, or elliptic, entire or pinnately lobed, with the lobes linear or elliptic, sometimes ciliate, white woolly beneath; heads solitary, on long peduncles or on peduncles shorter than the leaves; rays mostly yellow, orange, or red, often with a dark spot near the base.

An African genus of between 40 and 50 described species; 40 species recorded from South Africa, with a wide distribution. (Type: *G. rigens* (L.) Gaertn.)

9435 **171. HIRPICLIUM** Cass., Bull. Soc. Philom., p. 27 (1820)

Heads heterogamous, many-flowered, with marginal neuter florets and bisexual fertile disc-florets. *Involucre* campanulate; bracts in 7—8 rows, connate into a cup which is sometimes densely setose; free portion sometimes partially reflexed, ovate, lanceolate, or linear, sometimes scabrid or long ciliate on the margins. *Receptacle* conical, honeycombed. *Marginal-floret*:—*Corolla-tube* flattened, linear, about $2\frac{1}{2}$ times shorter than the limb, glabrous; limb linear, 3-toothed. *Staminodes* sometimes present. *Ovary* and *style* not developed. *Disc-floret*:—*Corolla-tube* tubular, scarcely widened above, glabrous; lobes 5, linear, setose on the back. *Anthers* minutely sagittate at the base. *Ovary* obovate, densely pilose with long hairs; style terete, somewhat thickened and cylindric above; style-branches linear, obtuse. *Pappus* double; inner rows of short scales; outer row of membranous delicate linear scales or of membranous scales divided into linear acuminate filaments, about as long as the corolla-tube.

Small woody shrubs; leaves alternate, sometimes fascicled, ericoid or lanceolate, entire, sometimes scabrid and pungent, sometimes white woolly beneath, otherwise glabrous; heads solitary, terminal, peduncled or subsessile; rays yellow.

Endemic; species 3, found in South West Africa, Namaqualand and the Williston, Matjesfontein, Laingsburg, Worcester, and Oudtshoorn districts. (Type: *H. echinulatum* Cass.)

9436

172. **BERKHEYOPSIS** O. Hoffm., Engl. & Prantl, Pflanzen Fam., vol. 4, sect. 5, p. 311 (1894)

Heads heterogamous, many-flowered, with marginal neuter flowers and bisexual fertile disc-florets. *Involucre* campanulate; bracts in 3—5 rows, connate into a cup, glandular-pilose, setose or glabrous; free portion of outer bracts linear or linear-lanceolate, sometimes acuminate, spinescent on the margins; free portion of inner bracts linear or ovate-lanceolate, sometimes long-acuminate, pungent, spinescent on the margins. *Receptacle* conical, honeycombed, with the rim of the pits produced. *Marginal-floret*:—*Corolla-tube* somewhat compressed, 3—4 times shorter than the limb, glabrous; limb linear, linear-oblong, or obovate-oblong, 3—4-toothed. *Ovary* and *style* not developed. *Disc-floret*:—*Corolla-tube* tubular, slightly widened above, somewhat angled, sparsely glandular or glabrous; lobes 5, linear or linear-lanceolate. *Anthers* linear, shortly sagittate at the base, with an ovate or lanceolate appendage. *Ovary* obovate or linear-oblong in outline, densely villous with long hairs; style terete, slightly thickened and cylindric above; style-branches linear or oblong, obtuse. *Pappus* of 4—6 broad fimbriated or 2—3-lobed membranous scales shorter than or about as long as the ovary or of 9 oblong acuminate fimbriated membranous scales almost as long as the corolla, or of long-linear membranous scales about $\frac{1}{2}$ as long as the corolla; an inner pappus of short obovate scales sometimes present.

Small annual or perennial woody shrubs 9—24 inches high, with several branches from a woody rootstock, sometimes caespitose, usually pilose; leaves alternate, sometimes fascicled, linear, linear-lanceolate, entire or with a few pungent teeth or margins with a few rigid cilia, sometimes scabrid, often woolly beneath; heads solitary, terminal, shortly or long-peduncled; rays yellow.

An African genus of 14 species; 9 species occur in South Africa and found in South West Africa, Namaqualand, Ngamiland, Bechuanaland, the Transvaal, and several of the north-western districts of the Cape Province. (Type: *B. echinus* (Less.) O. Hoffm.)

9437

173. **CULLUMIA** R. Br., in Ait. Hort. Kew., ed. 2, vol. 5, p. 137 (1813)

Heads heterogamous, several- to many-flowered, with marginal neuter florets and bisexual fertile disc-florets. *Involucre* campanulate; bracts in 4 rows, connate at the base, linear or lanceolate, acuminate, rigidly spinose-ciliate, sometimes reflexed, glabrous. *Receptacle* flat, honeycombed, with the rims of the pits produced into cups about $\frac{1}{2}$ as long as the corolla of the disc-floret. *Marginal-floret*:—*Corolla-tube* somewhat compressed, from $3\frac{1}{2}$ to 6 times shorter than the limb, glabrous; limb oblong-linear, 3—4-toothed. *Ovary* and *style* not developed. *Disc-floret*:—*Corolla-tube* usually tubular above and narrowed at the base or funnel-shaped, often angled, with a few glandular hairs; lobes 5, linear. *Anthers* linear, sagittate at the base, with a lanceolate appendage. *Ovary* oblong or linear-oblong in outline, glabrous; style terete; style-branches linear, obtuse. *Pappus* none.

Perennial woody shrubs, low growing or up to 4 feet high, usually glabrous, sometimes cobwebby; leaves alternate, linear, lanceolate, obovate-oblong, or ob-lanceolate, slightly recurved or strongly reflexed, more rarely upright, spinose-ciliate, pungent or sometimes spinous-tipped, usually glabrous, rarely woolly beneath; heads solitary, sessile, terminal at the end of the lateral branchlets or terminal on the main branches, very rarely axillary; rays yellow.

Endemic; species 16, recorded from the Clanwilliam district, through the coastal area to the Uitenhage district; also recorded from Seven Weeks Poort in the Prince Albert district. (Type: *C. ciliaris* (Willd.) R. Br.)

9438 174. *BERKHEYA* Ehrh., Beitr., vol. 3, p. 137 (1788)(Stephanocoma Less.; *Stobaea* Thunb.)

Heads heterogamous, several- to many-flowered, with marginal neuter florets and bisexual fertile disc-florets or homogamous with bisexual disc-florets. *Involucre* campanulate; bracts in 5—6 rows, lanceolate to ovate, often spinose-ciliate, or spinous at the base only, pungent, glabrous. *Receptacle* flat, honeycombed, with the margins of the pits produced and enveloping the ovary, or sometimes produced into long filiform processes. *Marginal-floret*:—*Corolla-tube* funnel-shaped, 3—8 times shorter than the limb, glandular-hairy or glabrous; limb linear, oblong-linear, or obovate, 3—4-toothed, sometimes glandular on the back. *Staminodes* often present. *Ovary* and *style* not developed or rarely a rudimentary style present. *Disc-floret*:—*Corolla-tube* tubular, gradually widening upwards, sometimes cylindric below, often angled, glandular-hairy; lobes 5, lanceolate, linear, or linear-oblong, sometimes glandular at the tip. *Anthers* linear, sagittate at the base, with a lanceolate appendage. *Ovary* subglobose, or obovoid, or oblong in outline, ribbed, densely pilose, sparsely hairy, glandular-pubescent, or glabrous; style terete, sometimes densely glandular above, sometimes undivided; style-branches linear, obtuse. *Pappus* in 1—2 rows of linear-lanceolate or lanceolate-oblong scales, as long as or shorter than the ovary, or of linear bristles as long as the corolla-tube, or of minute oblong scales.

Herbaceous or subwoody, branched or unbranched, up to 3 feet high, or acaulescent, often with a deep tap-root or branches arising from a woody rootstock, glabrous, cobwebby, or tomentose; leaves alternate, sometimes radical, sometimes up to 1 foot long, sessile or petioled, long-linear, linear, elliptic, lanceolate, obovate or spatulate, sometimes clasping at the base, with the cauline leaves sometimes decurrent, entire, pinnately partite, remotely toothed, spinose-ciliate, or spinous, pungent, sometimes setose on the upper surface, often white-tomentose beneath; heads terminal, either terminating the single stem or terminal on short branchlets, very rarely axillary, sessile or peduncled, usually solitary, rarely arranged in a corymbose or umbellate manner, ranging from small to large ($3\frac{1}{2}$ inches across); rays yellow.

Species 147, with a few exceptions all African; 116 species described from South Africa, extending from South West Africa, Namaqualand, and through the coastal area to Natal; also extends into the Transvaal, Basutoland, and many of the north-western and central districts of the Cape Province. (Type: *B. fruticosa* (L.) Ehrh.)

9438a 175. *CUSPIDIA* Gaertn., De Fruct. et Sem., vol. 2, p. 454 (1791)(Didelta L'Hérit. sect. *Cuspidia* of Fl. Cap.)

Heads heterogamous, several-flowered, with marginal neuter florets and bisexual fertile disc-florets. *Involucre* campanulate; bracts in 6 rows, connate; outer bracts ovate to elliptic, with usually 3 large marginal spines, distinctly veined, membranous; inner bracts lanceolate, with spines on the lower portion, rigidly ciliate above, pungent, veined, membranous. *Receptacle* flat, honeycombed, with the rim of the pits produced into a membranous cup enclosing the ovary. *Marginal-floret*:—*Corolla-tube* 0; limb oblong, 4-toothed, glandular-hairy. *Ovary* and *style* not developed. *Disc-floret*:—*Corolla-tube* narrowly funnel-shaped, somewhat angled, glandular-hairy; lobes 5, linear, glandular-hairy. *Anthers* linear, sagittate at the base, with a lanceolate appendage. *Ovary* oblong in outline, scantily pilose; style terete; style-branches linear, obtuse. *Pappus* a single row of linear ciliate bristles, $1\frac{1}{2}$ times as long as the ovary.

An annual, either acaulescent or branched and up to 12 inches high; the plants developed from a fruit in the mature head, which is often seen at the base of the

plant; leaves alternate, obovate or oblanceolate, clasping at the base, spinous-toothed, glabrous; heads solitary, terminal, peduncled or subsessile; rays yellow.

Endemic; species 1, recorded from the Fraserburg, Middelburg, Beaufort West, Uitenhage, Port Elizabeth, and Albany districts. (Type: *C. cernua* (L. fil.) Burtt)

9439 176. *DIDELTA* L'Hérit., Stirp. Nov., fasc. 3, p. 55 (1786)

(Sect. *Choristea* of Fl. Cap.)

Heads heterogamous, several-flowered, with marginal neuter florets and bisexual fertile disc-florets. *Involucre* flattened; bracts in 2 rows; outer bracts ovate, sometimes apiculate, scantily tomentose or glabrous; inner bracts lanceolate or linear-lanceolate, shortly acuminate, sometimes spinous on the margins. *Receptacle* flat, with very deep pits in which the ovaries are embedded. *Marginal-floret*:—*Corolla-tube* scarcely developed; limb oblong or oblong-linear, 4-toothed. *Staminodes* present. *Disc-floret*:—*Corolla-tube* tubular below, subcampanulate above, sparsely glandular-hairy; lobes 5, broadly linear or linear-lanceolate, sometimes cucullate at the apex. *Anthers* linear, sagittate at the base, with a lanceolate appendage. *Ovary* obconical, ribbed, pilose or glabrous; style terete, discoid at the base; style-branches linear, obtuse. *Pappus* a crown of linear acuminate ciliate scales shorter than or as long as the ovary.

Shrubs, varying in height from 6 inches to 8 feet, glabrous or tomentose; leaves alternate or opposite, sessile, ovate, elliptic, obovate, spathulate, or linear, entire or with a few spinous teeth, tomentose or glabrous; heads sessile or peduncled; rays yellow.

Endemic; species 2, extending from South West Africa to the Piquetberg and Malmesbury districts. (Type: *D. carnosa* (L. fil.) Ait.)

NOTE.—The plants grow from a fruit in the old flower-head, which often remains at the base of the plant; the mature receptacle breaks up into separate fragments.—E. P. P.

9441 177. *PLATYCARPHA* Less., Linnaea, vol. 6, p. 688 (1831)

Head homogamous, many-flowered, with bisexual fertile disc-florets. *Involucre* subglobose; bracts in few to many rows, stiff and pungent or herbaceous and woolly; inner bracts linear. *Receptacle* flat, paleate; paleae broadly linear or almost filamentous, somewhat shorter than the corolla-tube. *Corolla-tube* long-cylindric, widened above, about 3—4 times as long as the ovary, glandular-hairy; lobes 5, linear, usually thickened at the apex. *Anthers* linear, sagittate or tailed, with a lanceolate or ovate-lanceolate appendage. *Ovary* terete, linear in outline, faintly ribbed, glabrous; style terete or linear in the lowermost third and becoming terete above, with a swelling at the junction of the linear and terete portions; style-branches long-linear, linear-oblong, or oblong, obtuse, sometimes glandular. *Pappus* in 1—2 rows of 8—11 paleae; paleae stiff, linear, obtuse or lanceolate and submembranous or stiff and linear-oblong, as long as or slightly longer than the ovary.

Unbranched acaulescent plants or acaulescent with subterranean branches; leaves pinnately lobed with short spines on the leaves or leaves entire or subentire, spathulate, long-linear, or lanceolate, often narrowed below, pustulate on the upper surface, tomentose or woolly beneath; heads solitary and sessile, surrounded by the leaves, either a single head on each plant or a few heads terminating underground branches.

An African genus of 5 described species, all of which occur in the Union and are recorded from South West Africa, the north-western and south-western districts of the Cape Province to the Uitenhage district; also found in the Transvaal, the Orange Free State and Natal. (Type: *P. glomerata* (Thunb.) Less.)

9461 **178. CARDUUS** Linn., Sp. Pl., ed. 1, p. 820 (1753)

Head homogamous, many-flowered, with bisexual fertile disc-florets. *Involute* ovoid or globose, or oblong in outline; bracts in 8—9 rows, glabrous; outer bracts acuminate, pungent; innermost bracts broadly linear, shortly acuminate, acute. *Receptacle* flat or convex, densely setose, with the setae sometimes twice as long as the ovary. *Corolla-tube* cylindric, slightly widened above, glabrous; lobes 5, linear. *Anthers* linear, tailed or sagittate, with a lanceolate appendage; filaments pilose. *Ovary* somewhat compressed, oblong in outline, glabrous; style linear, cylindric above, with a ring of hairs at the base of the cylindric portion; style-branches short, oblong, obtuse, rarely long and filiform. *Pappus* in several rows of scabrid bristles as long as the corolla and an innermost pappus forming a short crown, deciduous with the basal annulus.

Erect herbs; leaves alternate, often decurrent, serrate, sinuous-toothed or pinnatifid, with the teeth or lobes spiny or rarely rigidly ciliate; heads small, medium-sized, or large, sometimes long-peduncled at the apices of the branches, sometimes subsessile, sometimes glomerate.

Species between 60 and 70, natives of Europe, Asia, North Africa, and the Canary Islands; a few species occur in South Africa as naturalized weeds. (Type: *C. nutans* L.)

9462 **179. CIRSIUM** Tourn., ex Adans., Fam., vol. 2, p. 116 (1763)

Heads homogamous, many-flowered, with bisexual fertile disc-florets. *Involute* ovoid or globose; bracts in many rows, imbricate; outer bracts gradually smaller, produced into long or short spines, sometimes pectinate-spinose; inner bracts often coloured, blunt, very rarely all blunt or the few outer elongated, leaf-like and spinose-pinnatifid. *Receptacle* flat, convex or subconical, densely setose. *Corolla-tube* long-cylindric, slightly widened above, glabrous; lobes 5, linear, somewhat cucullate at the apex. *Anthers* linear, sagittate, with a lanceolate appendage; filaments more or less papillose-pilose. *Ovary* oblong in outline, glabrous; style terete, somewhat thickened and 2-fid above or style-branches linear or filiform, often surrounded at the base with a ring of hairs. *Pappus* of feathery bristles in several rows, as long as the corolla-tube, deciduous with the basal annulus.

Herbs; leaves alternate, often decurrent, serrate or pinnately lobed, with the lobes and teeth spinescent or rarely rigidly ciliate; heads solitary or aggregated or paniced at the apices of the branches, sessile.

Described species between 150 and 200, found in Europe, North Africa, Asia, and north and central America; a few species naturalized in South Africa.

9476. **180. CENTAUREA** Linn., Sp. Pl., ed. 1, p. 909 (1753)

Heads heterogamous, many-flowered, with marginal female florets and bisexual fertile disc-florets or rarely homogamous with bisexual fertile disc-florets. *Involute* ovoid or subglobose; bracts in many rows, ovate, pungent, spinescent on the margins, sometimes woolly. *Receptacle* subflat, often fleshy, densely setose. *Disc-floret*:—*Corolla-tube* tubular, not widened above, glandular; lobes 5, lanceolate. *Anthers* linear, sagittate, with a lanceolate appendage. *Ovary* oblong in outline, beaked at the base, smooth, glabrous; style linear above, thickened below, shortly 2-lobed. *Pappus* in 2 rows; outer row of very short paleae; inner row of scabrid linear paleae about half as long as the ovary.

Perennial or very rarely annual herbs, often cano-tomentose; leaves alternate, sometimes radical, entire or often toothed, incised, or once or twice pinnatisect; heads small, medium-sized, or large, often peduncled, solitary or arranged in panicles, rarely axillary and with the floral leaves as long as the head.

Described species about 500, but probably not all valid; natives of Europe, North Africa and Asia; a few in northern and southern extra-tropical America; 1 species in Australia; a few species naturalized in South Africa. (Type: *C. centaurium* L.)

9500 181. OLDENBURGIA Less., Linnaea, vol. 5, p. 252 (1830)

Heads heterogamous, many-flowered, with marginal bisexual florets and female fertile disc-florets. *Involucre* subglobose or broadly campanulate; bracts in several rows, linear, linear-lanceolate, acuminate, acute, leathery; outer bracts tomentose or densely woolly at the base. *Receptacle* flat, nude. *Marginal-floret*.—*Corolla* bilabiate; tube cylindric, about $1\frac{1}{2}$ times as long as the ovary, glabrous; outer lobe about $1\frac{1}{2}$ times as long as the tube, broadly linear, 3-toothed, 3-lobed, or lobed to the base; inner lobe narrow-linear, equally as long as or somewhat shorter than the outer lobe, 2-toothed, 2-lobed, or lobed to the base; sometimes all the horns bluntly horned at the back of the apex. *Anthers* linear, long-tailed, without a distinct appendage. *Ovary* linear in outline, sometimes ribbed, pilose or glabrous; style terete, swollen at the base, 2-fid or style branches of 2 quadrate lobes which may be obtuse or faintly 3-toothed. *Pappus* in 1 row, of stiff barbellate bristles as long as the corolla. *Disc-floret*.—*Corolla-tube* tubular. *Staminodes* present. *Ovary* somewhat shorter than the corolla-tube, linear in outline, pilose or glabrous; style terete, ovoid at the base, capitate and entire at the apex. *Pappus* in 1 row, of stiff barbellate bristles, longer than the corolla-tube.

Acaulescent plants forming cushions up to 3 feet across on rocks or tall plants up to 15 feet high, tomentose or woolly; leaves alternate, sometimes up to 1 foot long, spatulate, spatulate-linear, elliptic or obovate, entire, sometimes densely woolly at the base, tomentose above and beneath, at length becoming glabrous above; heads solitary and sessile and surrounded by the leaves or peduncled and arranged in a racemose manner at the ends of the branches, sometimes up to 3 inches in diameter; florets pale in colour.

Endemic; species 3, perhaps only 2, recorded from the Stellenbosch to the Port Elizabeth districts; also found in the Albany district. (Type: *O. paradoxa* Less.)

9501 182. DICOMA Cass., Dict. Sci. Nat., vol. 7, p. 110 (1817)

Heads homogamous, few- to many-flowered, with bisexual fertile florets, or heterogamous with marginal neuter florets. *Involucre* campanulate; bracts in 6—11 rows, lanceolate, acuminate, pungent, glabrous. *Receptacle* flat, honeycombed, with the margins of the pits slightly produced, nude. *Marginal-floret* (when present).—*Corolla* cylindric, bifid at the apex, sometimes glandular-hairy on the lower portion. *Ovary* obovoid, pilose; style not developed. *Pappus* in 1 row, of barbellate bristles as long as the corolla. *Disc-floret*.—*Corolla-tube* tubular or tubular below, shortly campanulate above, glabrous; lobes 5, linear, sometimes glandular-hairy. *Anthers* linear, long-tailed, with the tails ciliate, with a lanceolate appendage. *Ovary* obovoid, prominently ribbed, densely pilose; style terete, slightly swollen at the base, bifid at the apex. *Pappus* of bristles in 1 or more rows, as long as the corolla, uniform and all barbellate, plumose, or scabrid; the inner sometimes broader with membranous margins, sometimes of linear paleae with a barbellate bristle on each side at the base.

Stems up to 3 feet high, often stems prostrate from a large tap-root, often tomentose; leaves alternate, sessile or petioled, linear or elliptic or obovate, sessile or petioled or attenuated at the base, tomentose above and beneath, or tomentose beneath only; heads sessile, terminal and axillary; florets purple.

An African genus of 48 species, 1 species found in east India and 2 in Madagascar; 25 species in South Africa, extending from South West Africa,

Bechuanaland and the north-eastern districts of the Cape, also recorded from the Transvaal, Swaziland, Zululand, Natal, Basutoland, the Orange Free State, to the Cala district. (Type: *D. tomentosa* Cass.)

9528 **183. GERBERA** Cass., Bull. Soc. Philom., p. 34 (1817)
(*Perdium* L.)

Heads heterogamous, many-flowered, with marginal female or neuter florets and bisexual fertile disc-florets, rarely heads homogamous by absence of rays (*Perdium*) or heads with both bisexual and female or male disc-florets. *Involucre* campanulate; bracts in 3—5 rows, linear or linear-lanceolate, sometimes acuminate, sparsely pilose to tomentose. *Receptacle* flat, somewhat honeycombed. *Marginal-floret*:—*Corolla* bilabiate, very rarely unilabiate; tube somewhat compressed, about 4—5 times shorter than the limb, glabrous; outer lip broadly linear or oblong-elliptic, 3-toothed; inner lip of 2 narrow-linear or almost filiform processes usually coiled, sometimes with a single 2-lobed process; the lobe or lobes shorter or longer than the tube. *Staminodes* often present. *Ovary* globose or linear or oblong in outline, often ribbed, pubescent or glandular-villous, or glandular; style terete; style-branches ovate, oblong, or oblong-linear, obtuse, glandular (style entire in neuter florets). *Pappus* of copious scabrid bristles longer than the corolla-tube. *Disc-floret*:—*Corolla* bilabiate, very rarely unilabiate; tube tubular, glabrous; outer lip elliptic or elliptic oblong, 3-toothed, more rarely 3-lobed; inner lip of 2—3 linear or oblong lobes, usually reflexed, rarely of a single lobe. *Anthers* linear, long-tailed, with the tails usually glandular-ciliate, with a lanceolate appendage. *Ovary* semi-terete, subglobose, or linear or oblong-linear in outline, sometimes beaked, often ribbed, villous or glandular-villous, or pilose; style terete; style-branches oblong, obtuse, glandular on the edges or sometimes on the back. *Pappus* of many scabrid bristles, as long as the corolla-tube.

Acaulescent herbs with thick cylindric roots, often with a woody rootstock with a woolly crown; leaves radical, alternate, petioled or subsessile, elliptic, oblong, lanceolate, suborbicular, oblanceolate or obovate, entire, toothed or pinnately lobed, sometimes cordate at the base, sometimes ciliate, usually pilose or tomentose beneath, rarely glabrous beneath or leaves densely woolly; petioles often woolly; heads on long or short, often variously hairy, peduncles; rays white, pink or red, or white above and red beneath.

Described species between 90 and 100, natives of Africa, Madagascar, Asia, east India, Japan, and Brazil; 31 species recorded from South Africa, extending from the Transvaal, Swaziland, Zululand, Natal, Basutoland, and the Orange Free State, through the coastal area to the south-western districts of the Cape Province. (Type: *G. linnaei* Cass.)

NOTE.—The separation of the species on the colour of the pappus as is done in the *Flora Capensis* does not always apply as, in some species, the pappus may vary in colour. In some species the outer disc-florets are female—a character of *Perdium*, and the absence of rays alone would not justify maintaining *Perdium* as a genus distinct from *Gerbera*.—E. P. P.

9553 **184. CICHORIUM** Linn., Sp. Pl., ed. 1, p. 813 (1753)

Heads homogamous, few-flowered, with ligulate bisexual florets. *Involucre* oblong in outline; bracts in 3 rows, glabrous; outer bracts elliptic, with a broad membranous apex, with a few stalked glands on the margins; inner bracts oblong-linear, with a few stalked glands on the back of some. *Receptacle* somewhat flat, honeycombed, with the margins of the pits shortly produced. *Corolla* ligulate, 5-toothed, glandular. *Anthers* linear, sagittate, with an oblong appendage. *Ovary* obconic, somewhat angled, glabrous; style subterete, pubescent on the upper portion; style-branches

linear, obtuse. *Pappus* in 4 rows of many linear and oblong-linear paleae about $\frac{1}{2}$ as long as the ovary and forming a crown on top of the ovary.

Subherbaceous, glabrous; leaves alternate, sessile, clasping at the base, lanceolate or broadly linear, subentire or toothed, glabrous; heads solitary or in small clusters on long scapes.

Species about 10, natives of Europe, the Mediterranean region, northern Asia, 1 species naturalized in South Africa. (Type: *C. intybus* L.)

9561

185. TOLPIS Adans., Fam., vol. 2, p. 112 (1763)

Heads homogamous, few-flowered, with ligulate bisexual fertile florets. *Involute* campanulate; bracts in 3 rows, lanceolate or oblong-lanceolate, glandular and setose on the back. *Corolla-tube* cylindric, about as long as the limb, glabrous; limb linear-oblong, 5-toothed. *Anthers* tailed, with an oblong appendage. *Ovary* terete or subterete, almost ellipsoid, ribbed, glabrous. *Pappus* of many barbellate bristles as long as the corolla-tube.

* Acaulescent, with an underground woody rootstock; leaves radical, lanceolate or elliptic, remotely toothed, glabrous; heads on long simple or branched scapes, laxly corymbose.

Species 20, natives of the Azores, the Canary Islands, the Mediterranean region, and Abyssinia; 1 species naturalized in the northern Transvaal and Natal.

NOTE.—The above description is based on the South African plants only.—E. P. P.

9572

186. HYPOCHOERIS Linn., Sp. Pl., ed. 1, p. 810 (1753)

Heads homogamous, several-flowered, with ligulate bisexual fertile florets. *Involute* campanulate or oblong-cylindric; bracts in 4—6 to many rows, ovate to lanceolate, glabrous. *Receptacle* flat, paleate; paleae broadly linear, long-awned, almost as long as the corolla. *Corolla-tube* cylindric, shorter than the limb, with a ring of hairs at the junction with the limb; limb obovate-oblong, truncate, 5-toothed. *Anthers* linear, tailed, with an oblong appendage. *Ovary* subterete, oblong-linear in outline, beaked, ribbed, sometimes pustulate, glabrous; style linear, pubescent or setose-glandular on the upper portion; style-branches linear, obtuse. *Pappus* of many barbellate bristles, slightly longer than the ovary.

Perennial rarely annual herbs, acaulescent, with a deep tap-root; leaves radical, lyrate, lobed, pilose; heads solitary at the apex of the branches of a divided scape.

Species about 50, natives of Europe, the Mediterranean region, northern Asia, and South America; two species naturalized in South Africa. (Type: *H. radicata* L.)

NOTE.—The above description is based on the species found in South Africa.—E. P. P.

9573

187. UROSPERMUM Scop., Introd., p. 122 (1777)

Heads homogamous, many-flowered, with ligulate bisexual fertile florets. *Involute* campanulate; bracts in 1 row, connate at the base, elliptic-lanceolate, with long papillae on the back. *Receptacle* flat, nude. *Corolla-tube* cylindric, longer than the limb, with copious hairs at the junction of the limb and the tube; limb broadly linear, truncate, 5-toothed. *Anthers* linear, sagittate, with an ovate appendage. *Ovary* obovate, beaked, tuberculed, glabrous; style linear, terete above, pubescent on the terete portion; style-branches linear, obtuse. *Pappus* of plumose bristles, slightly longer than the corolla-tube.

Annual or biennial herbs, acaulescent, or with a distinct stem; stems with scattered setose hairs; leaves alternate, some radical, mostly lyrate, toothed, setose; heads solitary, terminal, at the ends of long peduncles.

Species 2, natives of the Mediterranean region; 1 species naturalized in South Africa.

9575

188. *PICRIS* Linn., Sp. Pl., ed. 1, p. 792 (1753)

Head homogamous, many-flowered, with ligulate bisexual fertile florets. *Invulcre* campanulate; bracts in 3 rows; outer bracts ovate, pungent, ciliate; inner bracts broadly linear or lanceolate-linear, some with a long spinous awn from the back of the apex, setose on the back. *Receptacle* flat, honeycombed. *Corolla-tube* linear, shorter than the limb, sparsely pilose above; limb broadly linear, truncate, 4—5-toothed. *Anthers* linear, sagittate, with an oblong appendage. *Ovary* semi-terete, oblong-linear in outline, beaked, ribbed, glabrous; style linear, terete above, pubescent on the terete portion; style-branches linear, obtuse. *Pappus* of plumose bristles longer than the corolla-tube.

Erect branched herbs; stems ribbed, hispid; leaves radical and cauline, opposite, long lanceolate-linear, attenuated at the base, toothed, setose; cauline leaves amplexicaul; heads axillary and terminal, solitary or 2 nate, shortly peduncled.

Species between 40 and 50, natives of the Mediterranean region, Europe, temperate Asia, and Abyssinia; 1 species naturalized in South Africa. (Type: *P. hieracioides* L.)

NOTE.—The above description is based on the South African plants.—E. P. P.

9579

189. *TRAGOPOGON* Linn., Sp. Pl., ed. 1, p. 789 (1753)

Heads homogamous, many-flowered, with ligulate bisexual fertile florets. *Invulcre* oblong in outline; bracts in 3 rows, glabrous; outer bracts ovate-lanceolate, long-acuminate; inner bracts lanceolate, long-acuminate. *Receptacle* slightly convex, shallowly honeycombed. *Corolla-tube* linear, slightly shorter than the limb, pilose at the junction of the limb and tube; limb broadly linear, truncate, 5-toothed. *Anthers* linear, tailed, with a transversely oblong appendage. *Ovary* more or less ellipsoid, beaked, strongly ribbed, with the ribs tuberculate, pilose at the apex, otherwise glabrous; style linear, becoming terete above, glandular-pubescent on the cylindric portion; style-branches filiform, glandular. *Pappus* of plumose bristles as long as the corolla-tube and 3—4 awns almost as long as the corolla. *Achene* cylindric, ribbed, tuberculate, with a slender beak twice as long as the achene.

Erect rigid perennial, up to 3 feet high, with a large tap-root; leaves up to 1 foot long at the base, grass-like, alternate, sessile, entire, clasping at the base, glabrous; heads solitary, terminal at the end of a long scape.

Species about 40, natives of Europe, the Mediterranean region, eastern and central Asia; 1 species probably native in South Africa. (Type: *T. pratense* L.)

NOTE.—The above description is based on the South African plant.—E. P. P.

9593

190. *LAUNAEA* Cass., Dict. Sc. Nat., vol. 25, p. 321 (1822)

(*Microhyncus* Less.)

Heads homogamous, few-flowered, with ligulate bisexual fertile florets. *Invulcre* somewhat cylindric or campanulate; bracts in 4 rows, glabrous; outer bracts ovate, very short in relation to the inner; inner bracts broadly linear, with membranous margins. *Receptacle* small, nude. *Corolla-tube* cylindric, about 3 times as long as the limb, pubescent above or glabrous; limb oblong-linear, 4—5-toothed. *Anthers* linear, sagittate, with a lanceolate appendage. *Ovary* elliptic in outline, ribbed, glabrous; style linear, becoming terete above, pubescent on the terete portion; style-branches linear, obtuse or subobtuse, glandular. *Pappus* of copious setose bristles as long as the corolla-tube.

A creeper rooting at the nodes, found on sand dunes on margin of coastal bush, with milky juice; leaves alternate, elliptic-obovate or spatulate, narrowed to the

base, minutely toothed, fleshy, glabrous; heads axillary, solitary or a few together.

Species about 20, natives of the Mediterranean region, east India and the Canary Islands; 2 species in South Africa, extending along the coastal belt from Zululand to the Uitenhage district. (Type: *L. bellidifolia* Cass.)

NOTE.—The above description is based on the South African plants.—E. P. P.

9595

191. *SONCHUS* Linn., Sp. Pl., ed. 1, p. 793 (1753)

Heads homogamous, many-flowered, with ligulate bisexual fertile florets. *Involute* campanulate; bracts in 3—5 rows, ovate, ovate-lanceolate to broadly linear, glabrous. *Receptacle* flat, honeycombed, nude. *Corolla-tube* cylindric, 2—6 times longer than the limb, glabrous or scantily pilose above; limb linear or elliptic, shortly 5-lobed. *Anthers* linear, sagittate, with a lanceolate appendage. *Ovary* somewhat compressed, elliptic or oblong in outline, often with a narrow marginal wing, sometimes ribbed, glabrous; style linear, becoming terete above, pubescent on the terete portion; style-branches linear, obtuse. *Pappus* of copious fine bristles, $\frac{3}{4}$ as long or as long as the corolla.

Cauliscent or acaulescent plants, perennials or annuals, often with a thick tap-root; leaves alternate, radical or cauline, elliptic, spatulate, obovate-lanceolate, linear-lanceolate, or linear, sometimes long-acuminate, with the cauline leaves often clasping at the base, entire, toothed, or lobed, glabrous; heads sessile, subsessile, or peduncled, solitary, terminal and axillary, usually ending the branches of the scape.

Species between 40 and 50, natives of Europe, Asia, Africa, and Australia; 10 species in South Africa besides some naturalized species, recorded from South West Africa, the northern districts of the Cape Province, the Transvaal, Zululand, Natal, Basutoland, the Orange Free State, through the coastal area to the south-western districts. (Type: *S. oleraceus* L.)

9596

192. *LACTUCA* Linn., Sp. Pl., ed. 1, p. 795 (1753)

Heads homogamous, few-flowered, with ligulate bisexual fertile florets. *Involute* cylindric; bracts in 5 rows, ovate-lanceolate to broadly linear, with the outermost short in relation to the inner, glabrous. *Receptacle* flat, nude. *Corolla-tube* cylindric, $1\frac{1}{2}$ times as long as or twice as short as the limb, with a tuft of hairs below the junction of the limb and the tube, otherwise glabrous; limb broadly linear, shortly 3—5-lobed. *Anthers* linear, sagittate, with a lanceolate appendage. *Ovary* subellipsoid, shortly beaked, glabrous; style linear, sometimes becoming terete above, pubescent on the upper portion; style-branches linear, subobtusely, hairy on the back. *Pappus* of copious setose bristles as long as the corolla-tube. *Achene* long-beaked, elliptic, convex on one face, flat on the other face, with a single rib on both faces or achene strongly ribbed and minutely pustulate, setose above.

Herbs, glabrous or rarely hispid-pilose, varying from a few inches to 18 inches high, often with a deep tap-root; leaves alternate, radical and cauline, linear or elliptic, entire or deeply pinnately lobed, with the cauline leaves clasping at the base, glabrous or spinous on the midrib; head solitary, terminal and axillary or arranged in a large lax corymb or heads in a large lax panicle.

Species about 100, natives of northern Europe, Asia, Africa, and America; 2 species found in South Africa, widely spread. (Type: *L. sativa* L.)

NOTE.—The above description is based on the 2 South African species.—E. P. P.

9605

193. *CREPIS* Linn., Sp. Pl., ed. 1, p. 805 (1753)

(*Anisoramphus* DC.)

Head homogamous, many-flowered, with ligulate bisexual fertile florets. *Involute* campanulate; bracts in 3 rows, linear, densely setose on the back.

Receptacle flat, nude. *Corolla-tube* tubular, shorter than the limb, glabrous; limb oblong, 5-toothed. *Anthers* linear, sagittate, with an oblong appendage. *Ovary* more or less ellipsoid, glabrous; style linear, becoming terete above, pilose on the terete portion; style-branches linear, obtuse, glandular. *Pappus* of copious bristles longer than the corolla-tube. *Achene* linear in outline, strongly ribbed, attenuated into a beak, setose on the ribs.

Acaulescent with a woody rootstock; leaves radical, linear or obovate-lanceolate, entire, toothed, or lobed, glabrous; head solitary and terminal or arranged in a lax corymb.

Described species about 200, dispersed in the northern hemisphere; 1 species in South Africa, recorded from the Transvaal, Natal, Basutoland, East Griqualand to the Komgha district. (Type: *C. biennis* L.)

NOTE.—The above description is based on the South African plant.—E. P. P.

9607 194. **HIERACTIUM** Linn., Sp. Pl., ed. 1, p. 799 (1753)

Head homogamous, many-flowered, with ligulate bisexual fertile florets. *Involucre* campanulate; bracts in 4 rows, linear, subacuminate, glandular on the back. *Receptacle* flat, nude. *Corolla-tube* tubular, twice as long as the limb, glandular-pilose; limb oblong-elliptic, 5-toothed, glandular-pilose on the back. *Anthers* linear, sagittate, with an ovate appendage. *Ovary* more or less ellipsoid, ribbed, glabrous; style linear, setose above; style-branches linear, obtuse, glabrous. *Pappus* of many setose bristles, slightly longer than the corolla-tube. *Achene* linear, strongly ribbed.

Perennial, acaulescent from a tap-root; leaves radical, obovate or oblanceolate, narrowed to the base, remotely toothed or shallowly toothed, glabrous; heads solitary, terminal, usually arranged in a lax corymb.

Described species about 400, natives of Europe, North and South America, the Orient, North Africa, north and east Asia; 1 species in South Africa, recorded from the Transvaal, Natal, Basutoland, and the eastern and south-eastern districts. (Type: *H. murorum* L.)

NOTE.—The above description is based on the South African plant.—E. P. P.

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 1983. *Girardinia* Gaudlich.
 1311. *Gladiolus* Linn.
 2388. *Glinus* Linn.
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 8992. *Gnaphalium* Linn.
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 1029. *Haworthia* Duval
 7566. *Hebenstreitia* Linn.
 8136. *Hedyotis* Linn.
 4589. *Heeria* Meissn.
 8326. *Heinsia* DC.
 4278. *Heistera* Linn.
 9006. *Helichrysum* Mill
 275. *Helicotrichum* Bess.
 4905. *Helinus* E. Mey.
 2875. *Heliophila* Linn.
 7052. *Heliotropium* Linn.
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 7472. *Hemimeris* Linn. f.
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 1166. *Hessea* Herb.
 924. *Heteranthera* Ruiz. et Pavon
 9057. *Heterolepis* Cass.
 8931. *Heteromma* Benth.
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 5013. *Hibiscus* Linn.
 9607. *Hieracium* Linn.
 7615. *Hiernia* Sp. Moore
 8030. *Himanochilus* T. And.
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 7772. *Holubia* Oliv.
 5313. *Homalium* Jacq.
 1277. *Homeria* Vent.
 9053. *Homochaete* Benth.
 8883. *Homochroma* DC.
 2572. *Homocnemia* Miers
 1312*h*. *Homoglossum* Salisb.
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 6878*a*. *Hoodiopsis* Luckh.
 8749. *Hoplophyllum* DC.
 410. *Hordeum* Linn.
 7357. *Hoslundia* Vahl
 6887. *Huernia* R. Br.
 6882. *Huermiopsis* N. E. Br.
 1414. *Huttonaea* Harv.
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 4336. *Hyaenanche* Lamb.
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 5271. *Hybanthus* Jacq.
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 7629. *Hyobanche* Linn.
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 2390. *Hypertelis* E. Mey.
 553. *Hyphaene* Gaertn.
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 9572. *Hypochoeris* Linn.
 816. *Hypodiscus* Nees
 8032. *Hypoestes* Soland.
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 7564. *Ilysanthes* Rafin.
 2405. *Imitaria* N. E. Br.

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 109. *Imperata* Cyr.
 3702. *Indigofera* Linn.
 9337a. *Inezia* Phill.
 9061. *Inula* Linn.
 9336. *locaste* E. Mey.
 5271. *Ionidium* Vent.
 975. *Iphigenia* Kunth
 9065. *Iphiaona* Cass.
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 8079. *Isoglossa* Oerst.
 8694. *Isolobus* A. DC.
 1302. *Ixia* Linn.
 7498. *Ixianthes* Benth.

 6991. *Jacquemontia* Choisy
 7519. *Jamesbrittenia* O. Kuntze
 1230a. *Janthe* Griseb.
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 4433. *Jatropha* Linn.
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 936. *Juncus* Linn.
 5791. *Jussiaea* Linn.
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 8094. *Justicia* Linn.
 2405a. *Juttadinteria* Schwant.

 1346. *Kaempferia* Linn.
 3166. *Kalanchoe* Adans.
 6780. *Kanahia* R. Br.
 8568. *Kedrostis* Medik.
 8352. *Keetia* Phill.
 1312c. *Kentrosiphon* N. E. Br.
 2405. *Khadia* N. E. Br.
 7761. *Kigelia* DC.
 5296. *Kiggelaria* Linn.
 6921. *Kinepetalum* Schltr.
 4128. *Kirkia* Oliv.
 5388. *Kissenia* R. Br.
 1298. *Klattia* Baker
 9411. *Klenia* L.
 1186a. *Klingia* Schonl.
 1024. *Kniphofia* Moench.
 2541a. *Knowltonia* Salisb.
 2240. *Kochia* Roth.
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 6787. *Krebsia* Harv.
 462. *Kyllinga* Rottb.

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 6469. *Lachnopylis* Hochst.
 9045. *Lachnospermum* Willd.
 4291. *Lachnostylis* Turcz.
 9596. *Lactuca* Linn.
 88. *Lagarosiphon* Harv.
 6248b. *Lagenocarpus* Klotz.
 8939. *Laggera* Sch. Bip.
 256. *Lagurus* Linn.
 8351f. *Lagynias* E. Mey.

 374. *Lamarckia* Moench.
 2405a. *Lampranthus* N. E. Br.
 807. *Lamprocaulos* Mast.
 1236. *Lanaria* Ait.
 6562. *Landolphia* Beauv.
 9432c. *Landtia* Less.
 4563. *Lannea* A. Rich.
 7144. *Lantana* Linn.
 1314. *Lapeyrousia* Pourr.
 2405. *Lapidaria* Schwant.
 7073. *Lappula* Moench.
 371. *Lasiocloa* Kunth
 9417a. *Lasiocoma* Bolus
 7268a. *Lasiocorys* Benth.
 8987. *Lasiopogon* Cass.
 5435a. *Lasiosiphon* Fresn.
 9321. *Lasiospermum* Lag.
 3644. *Lathriogyne* E. & Z.
 9593. *Launaea* Cass.
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 8699. *Laurentia* Michx.
 4647. *Lauridia* E. & Z.
 4587. *Laurophyllus* Thunb.
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 6116. *Lefeburia* A. Rich.
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 9008. *Leontonyx* Cass.
 7971. *Lepidagathis* Willd.
 2883. *Lepidium* Linn.
 9340. *Lepidostephium* Oliv.
 2450. *Lepigonum* Wahlb.
 1026a. *Leptaloe* Stapf
 8274. *Leptactinia* Hook. f.
 113a. *Leptatherum* Nees
 6246. *Leptericia* N. E. Br.
 808. *Leptocarpus* R. Br.
 337b. *Leptocarydion* Hochst.
 8665. *Leptocodon* Sond.
 8929. *Leptothamus* DC.
 398. *Lepturella* Stapf
 402. *Lepturus* R. Br.
 3756. *Lessertia* DC.
 2037. *Leucadendron* Berg.
 7268. *Leucas* R. Br.
 166h. *Leucophrys* Rendle
 3379. *Leucosidea* E. & Z.
 2036. *Leucospermum* R. Br.
 2313. *Leucosphaera* Gilg
 9052. *Leyssera* Linn.
 5990. *Lichtensteinia* C. & S.
 9337. *Lidbeckia* Berg.
 8670. *Lightfootia* L'Hérit.
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 6351a. *Limonium* Mill.
 7558. *Limosella* Linn.
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7480. *Linaria* Mill.
 3287. *Linconia* Linn.
 7562. *Lindernia* Allioni
 300a. *Lintonia* Stapf
 3945. *Linum* Linn.
 3642. *Liparia* Linn.
 1556. *Liparis* L. C. Rich.
 452. *Lipocarpha* R. Br.
 7145. *Lippia* Linn.
 989a. *Liriothamnus* Schltr.
 1647. *Lissochilus* R. Br.
 3658. *Listia* E. Mey.
 1835. *Listrostachys* Reichb. fil.
 1085. *Litanthus* Harv.
 2405. *Lithops* N. E. Br.
 7109. *Lithospermum* Linn.
 2405. *Litocarpus* L. Bol.
 964. *Littonia* Hook. f.
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 3834. *Lonchocarpus* H. B. & K.
 3286. *Lonchostoma* Wikstr.
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 9401. *Lopholaena* DC.
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 3698. *Lotus* Linn.
 278a. *Loudetia* Hochst.
 4586. *Loxostylis* Spreng.
 6885c. *Luckhoffia* White & Sloane
 5793. *Ludwigia* Linn.
 937. *Luzula* DC.
 7379. *Lycium* Linn.
 7519. *Lyperia* Bth.
 9417. *Lysichlamys* Compton
 6330. *Lysimachia* Linn.
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 6405. Maba J. R. & G. Forst.
 4400. *Macaranga* Thouars
 2405a. *Machairophylum* Schwant.
 8039. *Mackaya* Harv.
 9053. *Macowania* Oliv.
 2405a. *Macrocaulon* N. E. Br.
 494a. *Macrochaetium* Steud.
 6865. *Macropetalum* Burch.
 8030. *Macrorungia* C. B. Cl.
 4044. *Macrostylis* Bartl. & Wendl.
 3112. *Maerua* Forsk.
 6283. *Maesa* Forsk.
 5056. *Mahernia* Linn.
 8900. *Mairea* Nees
 8883. *Mairia* Nees
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 7497b. *Manuleopsis* Thellung
 9370. *Marasmodus* DC.
 2308. *Marcellia* Baill.
 2308. *Marcelliopsis* Schinz
 459c. *Mariscus* Gaertn.
 7744. *Markhamia* Seem.
 4907. *Marlothia* Engl.
 5996a. *Marlothiella* Wolff
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 3042. *Matthiola* R. Br.
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 8061. *Megalochlamys* Lindau
 166g. *Megaloprotachne* Hubb.
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 3557. *Melanosticta* DC.
 9204. *Melanthera* Rohr
 7597. *Melasma* Berg.
 7597a. *Melasma* Berg.
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 3689. *Melilotus* Adans.
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 8562. *Melothria* Linn.
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 2405. *Mentocalyx* N. E. Br.
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 6997. *Merremia* Dennst.
 2405. *Mesembryanthemum* Linn.
 829. *Mesanthemum* Koern.
 9411. *Mesogamma* DC.
 2405. *Mestoklema* N. E. Br.
 9043. *Metalasia* R. Br.
 5588. *Metrosideros* Banks
 2405a. *Meyerophytum* Schwant.
 8694. *Mezleria* Presl
 1313. *Micranthus* Eckl.
 3746. *Microcharis* Benth.
 281. *Microchloa* R. Br.
 4367. *Micrococca* Benth.
 8677. *Microcodon* A. DC.
 7569. *Microdon* Choisy
 8921. *Microglossa* DC.
 6752. *Microloma* R. Br.
 7305. *Micromeria* Benth.
 2405a. *Micropterum* Schwant.
 9593. *Microrhynchus* Less.
 113a. *Microstegium* Nees
 9432d. *Microstephium* Less.
 2287. *Microtea* Sw.
 8818. *Mikania* Willd.
 3720. *Milletia* Wight & Arn.
 2031. *Mimetes* Salisb.
 3449. *Mimosa* Linn.

7524. *Mimulus* Linn.
 6386. *Mimusops* Linn.
 9064. *Minurothamnus* DC.
 112. *Miscanthidium* Stapf
 8479. *Mitracarpum* Zucc.
 8479. *Mitracarpus* Zucc.
 8352. *Mitrastigma* Harv.
 2405. *Mitrophyllum* Schwant.
 3293. *Mniothamnus* Niedenzu
 5370. *Moecca* Lam.
 2387. *Mollugo* Linn.
 8591. *Momordica* Linn.
 9061. *Monactinocephalus* Klatt
 1436. *Monadenia* Lindl.
 4503. *Monadenium* Pax
 8094a. *Monechma* Hochst.
 144. *Monelytrum* Hack.
 6444. *Monetia* L'Hérit. of Fl. Cap.
 7546. *Moniera* R. Br.
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 8694. *Monopsis* Salisb.
 5315. *Monospora* Hochst.
 3925. *Monsonia* Linn.
 1306. *Montbretia* DC.
 1311a. *Montbretiopsis* L. Bolus
 3238. *Montinia* Thunb.
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 1265. *Morea* Mill.
 3128. *Moringa* Juss.
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 2405. *Mossia* N. E. Br.
 3877. *Mucuna* Adans.
 2405. *Muiria* N. E. Br.
 8562. *Mukia* Arn.
 4279. *Mundia* Kunth
 3719. *Mundulea* Benth.
 4278. *Muraltia* Neck.
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 7100. *Myosotis* Linn.
 2543. *Myosurus* Linn.
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 5834. *Myriophyllum* Linn.
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 2155. *Mystroptalon* Harv.
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 2405. *Nanatus* N. E. Br.
 1005. *Nanolirion* Benth.
 2965. *Nasturtium* R. Br.
 4853. *Natalia* Hochst.
 7367. *Nautochilus* Bremk.
 3289. *Nebelia* Neck.
 3956. *Nectaropetalum* Engl.
 2405. *Nelia* Schwant.
 2309b. *Nelsia* Schinz
 7476. *Nemesia* Vent.
 8439. *Nenax* Gaertn.
 1099a. *Neobakeria* Schltr.
 971a. *Neodregea* C. H. Wright
 2405a. *Neohenricia* L. Bol.
 3975. *Neoluderitzia* Schinz
 1100a. *Neopateronia* Scholz.
 3865. *Neorautanenia* Schinz
 2405a. *Neorhine* Schwant,
 1175. *Nerine* Herb.
 5486. *Nesaea* Comm.
 9048. *Nestlera* Spreng.
 5326. *Neumannia* A. Rich.
 7977. *Neuracanthus* Nees
 3390. *Neurada* Linn.
 3390a. *Neuradopsis* Bremek. & Oberm.
 8951. *Nicolasia* Sp. Moore
 7434. *Nicotiana* Linn.
 8925. *Nidorella* Cass.
 3112. *Niebuhria* DC.
 1297. *Nivenia* Vent.
 2029. *Nivenia* R. Br.
 8929. *Nolletia* Cass.
 4880. *Noltia* Reichb.
 4880. *Noltia* Reichb.
 4534. *Notobuxus* Oliv.
 1025. *Notoscepttrum* Benth.
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 5112. *Ochna* Schreb.
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 2788. *Ocotea* Aubl.
 2405. *Octopoma* N. E. Br.
 4563. *Odina* Roxb.
 2405a. *Odontophorus* N. E. Br.
 337d. *Odyssea* Stapf
 9322. *Oedera* Linn.
 6046a. *Oenanthe* Linn. of Fl. Cap.
 8114. *Oftia* Adans.
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 9500. *Oldenburgia* Less.
 8136. *Oldenlandia* Linn.
 6434. *Olea* Linn.
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 9427. *Oligocarpus* Less.
 3126. *Oligomeris* Cambess.
 9416. *Oligothrix* DC.
 5428. *Olinia* Thunb.
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 8464. *Richardsonia* Kunth
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 2405a. *Rimaria* N. E. Br.
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 7965. *Ruellia* Linn.
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 4784. *Sapindus* Linn. in Fl. Cap.
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 1432. *Schizodium* Lindl.
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 6020. *Schlechterosciadium* Wolff
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3964. Seetzenia R. Br.
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7568. Selago Linn.
2405a. Semnanthe N. E. Br.
2376a. Semonvillea Gay
2884. *Senebiera* Poir.
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8667. Siphoncodon Turcz.
2305. Sericocoma Fenzl
2307. Sericorema Hook. f.
5833. *Serpicula* Linn.
2030. Serruria Salisb.
7774. Sesamothamnus Welw.
7777. Sesamum Linn.
3747. Sesbania Scop.
6116. Seseli Linn. of Fl. Cap. ex parte
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1346. *Siphonochilus* Wood & Franks
8049. Siphonoglossa Oerst.
6870. *Siphonostema* Schltr.
2917. Sisymbrium Linn.
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6861. Sisyranchus E. Mey.
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1307. Sparaxis Ker
4957. Sparrmannia Linn.
283. Spartina Schreb.
2032. Spatalla Salisb.
2032a. Spatallopsis Phill.
2449. Spergula Linn.
2450. Spergularia (Pers.) J. et Presl
8475. Spermacoce Gaertn.
4986. Sphaeralcea A. St. Hil.
8955. Sphaeranthus Linn.
6896. Sphaerocodon Bth.
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8597. Sphaerosicyos Hook. f.
3159. Sphaerotherylax Bischoff
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7151. Stachytarpheta Vahl
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6885. Stapelia Linn.
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9421a. *Steirodiscus* Less.
2429. Stellaria Linn.
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9385. Stilpnogyne DC.
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9037. Stoebe Linn.
2405a. Stomatium Schwant.
6741. Stomatostemma N. E. Br.
280e. Streblochaete Hochst.
1319. Strelitzia Dryand
1304. Streptanthera Sweet
7823. Streptocarpus Lindl.
5356. Streptopetalum Hochst.
7625. Striga Lour.
6688. Strophanthus DC.
1171. Strumaria Jacq.

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 5435e. *Struthiolopsis* Phill.
 6460. *Strychnos* Linn.
 6885a. *Stultitia* Phill.
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 3802. *Stylosanthes* Swartz
 2261. *Suaeda* Forsk.
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 8887a. *Susanna* Phill.
 7519. *Sutera* Roth.
 3754. *Sutherlandia* R. Br.
 6512. *Swertia* Linn.
 3717. *Sylitra* E. Mey.
 9287. *Symphipappus* Klatt
 6245. *Sympieza* Licht.
 4500. *Synadenium* Boiss.
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 7359. *Syncolostemon* E. Mey.
 6246. *Syndesmanthus* Klotz.
 832a. *Syngonanthus* Ruhl.
 1309. *Synnotia* Sweet
 1260. *Syringodea* Hook. f.
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 8937. *Tarchonanthes* Linn.
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 7713. *Tecomera* Spach.
 7494. *Teedia* Rudolphi
 2335. *Telanthera* (R. Br.) Graebner
 6917a. *Telosma* Coville
 6921. *Tenaris* E. Mey.
 3718. *Tephrosia* Pers.
 3866. *Teramnus* P. Br.
 5544. *Terminalia* Linn.
 1252a. *Testudinaria* Salisb.
 301. *Tetrachne* Nees
 2403. *Tetragonia* Linn.
 299. *Tetrapogon* Desf.
 494. *Tetraria* Beauv.
 3082. *Tetratelia* Sond.
 7212. *Teucrium* Linn.
 2548. *Thalictrum* Linn.
 3284. *Thamnea* Soland.
 9338. *Thaminophyllum* Harv.
 813. *Thamnochortus* Berg.
 4014. *Thamnosma* Torr. & Frem.
 6242. *Thamnus* Klotz.
 8677a. *Thieleria* Phill.
 136. *Themeda* Forsk.
 1315. *Thereianthus* Lewis
 2117. *Thesidium* Sond.
 2118. *Thesium* Linn.
 5018. *Thespesia* Soland.
 2879. *Thlaspeocarpa* C. A. Smith
 9417. *Thodaya* Compton
 6243. *Thoracosperma* Klotz.
 7367a. *Thorncroftia* N. E. Br.

 7914. *Thunbergia* Retz
 6046a. *Thunbergiella* Wolff
 1079a. *Thuranthos* C. H. Wright
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 2405. *Thyrasperma* N. E. Br.
 2405a. *Thyrasperma* N. E. Br.
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 7213. *Tinnea* Kotschy Peyritsch
 2405. *Titanopsis* Schwant.
 9196. *Tithonia* Desf.
 3285. *Tittmannia* Brongn.
 4077. *Toddalia* Juss.
 4078. *Toddaliopsis* Engl.
 9561. *Tolpis* Adans.
 7561. *Torenia* Linn.
 7051. *Tournefortia* Linn.
 8567. *Toxanthera* Hook. f.
 4336. *Toxicodendrum* Thunb.
 131. *Trachypogon* Nees
 6020. *Trachysciadium* E. & Z.
 4416. *Tragia* Linn.
 6014a. *Tragiopsis* Pomel
 9579. *Tragopogon* Linn.
 143. *Tragus* Haller
 5829. *Trapa* Linn.
 8665. *Treichelia* Vatke
 1902. *Trema* Lour.
 475. *Trianoptiles* Fenzl
 2395. *Trianthema* Linn.
 4206. *Triaspis* Burch.
 2403. *Tribulocarpus* Sp. Moore
 3978. *Tribulus* Linn.
 8308. *Tricalysia* A. Rich.
 4195. *Trichilia* P. Br.
 6879. *Trichocaulon* N. E. Br.
 3311. *Trichocladus* Pers.
 2405. *Trichocycelus* N. E. Br.
 7056. *Trichodesma* R. Br.
 2405a. *Trichodiadema* Schwant.
 8967. *Trichogyne* Less.
 168. *Tricholaena* Schrad.
 168a. *Tricholaena* Schrad.
 337c. *Trichoneura* Anderss.
 278. *Trichopteryx* Nees
 278a. *Trichopteryx* Nees ex parte
 3690. *Trifolium* Linn.
 66. *Triglochin* Linn.
 3687. *Trigonella* Linn.
 2862. *Trigonocapnos* Schltr.
 5315. *Trimeria* Harv.
 475. *Trionoptyles* Fenzl
 371a. *Triphlebia* Stapf
 298. *Tripogon* R. & S.
 9427. *Tripteris* Less.
 317. *Triraphis* R. Br.
 271. *Trisetum* Pers.
 277. *Tristachya* Nees
 3140. *Tristicha* Thouars
 1306. *Tritonia* Ker
 1311b. *Tritoniopsis* L. Bolus
 4975. *Triumfetta* Linn.
 8608. *Trochomeria* Hook. f.
 5369. *Tryphostemma* Harv.
 1047. *Tulbaghia* Linn.
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 4171. *Turraea* Linn.

3000. *Turritis* Linn.
 6899. *Tylophora* R. Br.
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 125. *Urelytrum* Hack.
 1978. *Urera* Gaudich.
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 1080*a*. *Urgineopsis* Compton
 323. *Urochlaena* Nees
 166*b*. *Urochloa* Beauv.
 9573. *Urospermum* Scop.
 9431. *Ursinia* Gaertn.
 9431*a*. *Ursinia* sensu N. E. Br.
 9431*a*. *Ursiniopsis* Phill.
 1974. *Urtica* Linn.
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 2673. *Uvaria* Linn.

 2501. *Vaccaria* Medik.
 6216. *Vaccinium* Linn.
 3201. *Vahlia* Thunb.
 8532. *Valeriana* Linn.
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 8351. *Vangueria* Juss.
 8351*e*. *Vangueriopsis* Robyns
 2405. *Vanheerdisia* L. Bol.
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 9432*a*. *Venidium* Less.
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 3905. *Vigna* Savi
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 6612. *Voacanga* Thour.
 6345. *Vogelia* Lam. of Fl. Cap.
 385*a*. *Vulpia* Gmel.

 1162. *Wachendorfia* Burm.
 8668. *Wahlenbergia* Schrad.
 7568*a*. *Walafrida* E. Mey.
 1231. *Walleria* Kirk
 3647. *Walpersia* Harv.
 5059. *Waltheria* Linn.
 5256. *Warburgia* Engl.
 8285. *Warneria* Linn.
 1315. *Watsonia* Mill.
 8926. *Webbia* Sch. Bip.
 9192. *Wedelia* Jacq.
 5529. *Weihea* Spreng.
 7131. *Wellstedtia* Pilger
 48. *Welwitschia* Hook. f.
 1100. *Whiteheadia* Harv.
 3661. *Wiborgia* Thunb.
 38. *Widdringtonia* Endl.
 818. *Willdenowia* Thunb.
 293. *Willkommia* Hack.
 4985. *Wissadula* Medik.
 7400. *Withania* Pauquy
 1296. *Witsenia* Thunb.
 796. *Wolffia* Horkel
 6790. *Woodia* Schltr.
 5355. *Wormskioldia* Thonn.
 6689. *Wrightia* R. Br.
 972. *Wurmbea* Thunb.

 9148. *Xanthium* Linn.
 3991. *Xanthoxylon* of Fl. Cap.
 3991. *Xanthoxylum* Mill.
 9427. *Xenismia* DC.
 3453. *Xerocladia* Harv.
 7136. *Xeroplana* Briq.
 2136. *Ximenia* Linn.
 2717. *Xylopia* Linn.
 5320. *Xylosma* Forst. f.
 5284. *Xylothea* Hochst.
 2759*a*. *Xymalos* Baill.
 168. *Xyochlaena* Stapf
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 6777. *Xysmalobium* R. Br.

 7523. *Zaluzianskya* F. W. Schmidt
 62. *Zannichellia* Linn.
 748. *Zantedeschia* Spreng.
 3991. *Zanthoxylon* of Fl. Cap.
 8562. *Zehneria* Endl.
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 1502. *Zeuxine* Lindl.
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 4861. *Zizyphus* Adans.
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